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EARTH GARDEN

~organic growing guide

Compost and mulch

• THE ORGANIC IDEA — HOW TO GROW FOOD WITHOUT POISONS • MAKING COMPOST • BOXES, BINS & BARRELS • PIT, TRENCH AND HAYBALE • ORGANIC METHODS FOR SEMI-ARID AREAS • WOT NO DIGGING? — MULCH IT INSTEAD! • CARPETING THE GARDEN • VEGIES ON THE VERGE • COMPACT GROWING BOXES • ROTOR-TILLER • INTERVIEW WITH A TRADITIONAL FARMER • FRESH FIGS • THE BORNHOFFEN STORY • TASTY TEMPEH • TWO TRICKLE WATERING SYSTEMS • GLASS BOTTLE MOSAICS • COOL KITCHENS • A MACROBIOTIC BAKERY • PLACE • THE NEXT WHOLE EARTH CATALOG • LETTERS • LAND LINES • ACCESS • LOTS MORE!

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Earth Garden in 1982

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Earth Garden 33, out in February, 1982, will be our tenth anniversary issue! We think this is a real achievement for a "little" journal with big ideas, but with no grants, no backers or advertisements (and no strings attached). We're proud and excited about it.

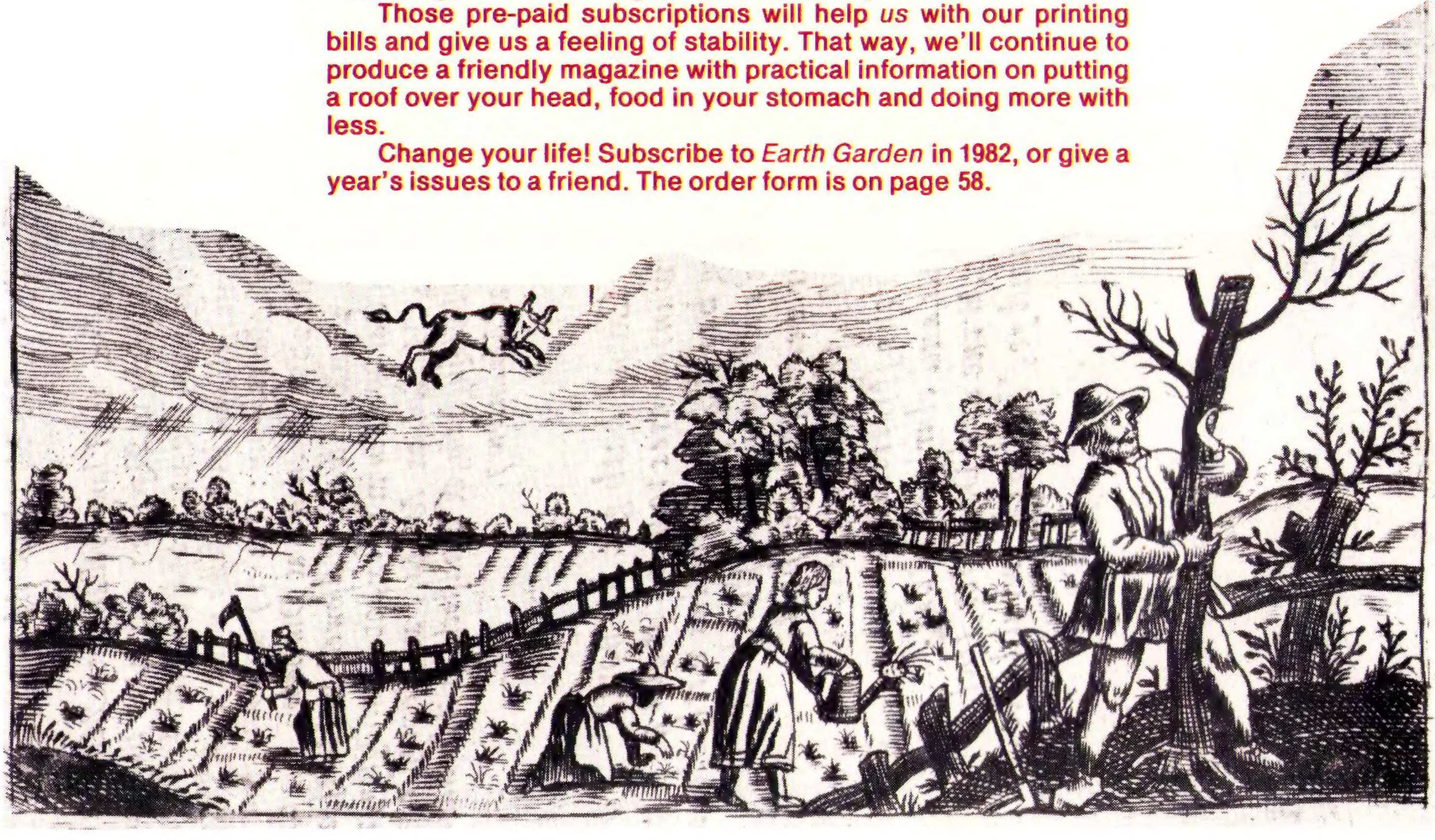
Over the years we've built up a small, dedicated readership throughout Australia, which currently stands at one in every 1,000 people. The essential nucleus, our valued subscribers, stands at one in every 7,000 people.

We have learned from experience that our readers want to see a new issue on the dot regularly each quarter, so we are promising to do this during 1981 and 1982. We are offering the four issues for 1982 at this year's rate — $9.00 posted — *if you subscribe now.*

You will receive *Earth Garden* in your letter-box each February, May, August and November. You pay only 25 cents per copy for postage and handling. It will save *you* time and effort searching around newsagents and bookshops.

Those pre-paid subscriptions will help *us* with our printing bills and give us a feeling of stability. That way, we'll continue to produce a friendly magazine with practical information on putting a roof over your head, food in your stomach and doing more with less.

Change your life! Subscribe to *Earth Garden* in 1982, or give a year's issues to a friend. The order form is on page 58.



EARTH GARDEN 30

Earth Garden, established in 1972, presents a range of natural lifestyles. It is intended as a key to sources, practical ideas, alternatives and self-sufficiency.

It is concerned with non-polluted living and growing, the back-to-the-earth movement, surviving in the city, the bush, food and diet, and the inner changes which follow when you are in tune with nature.

Let us lead you up Earth Garden's path to the good life.

We don't have advertisements in Earth Garden. That way we're not influenced by any vested interests. Books, places and products recommended are those we think relevant.

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The cover

Front: Adam and Eve — detail from *A Merry Feast,* painted linen wall hanging by Swedish artist Anders Palsson, 1818.

Back: Top — Carl Hoipo, vice president of the Henry Doubleday Research Association, with a set of three permanent compost bins at the H.D.R.A. trial grounds at Kenthurst, Sydney.

Below — One of Peter Kurz's beautiful glass bottle mosaic designs at his *Adobe Flats* at Mallacoota, Victoria.

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Matthew relishes a ripe fig.

FRESH FIGS

By NOEL CARRICK

For years I watched the birds gobbling up the luscious sweet ripe figs on my back garden fig tree.

Not that I begrudged the birds a feed, but I wondered if there was a better use for the figs. I found myself in the same position as many Australians who suddenly find they have become the proud owners of a fig tree — but don't know how to use the fruit.

People buying older suburban homes or farm properties often find their new home has a gnarled old fig tree still producing bountiful crops. This happens because fig trees continue to bear well despite years of neglect. Fig tree cuttings came here with the First Fleet in 1788 and we have inherited the fig trees these reluctant pioneers brought with them.

But somehow, over the years, we've lost the traditional methods of preparing figs for the table and they have become the most neglected of fruits. This is a pity because figs, besides being one of the oldest cultivated fruits, are among the most tasty, wholesome and nutritious.

They are also probably the easiest fruit tree to maintain as they need no attention whatsoever.

I consider my twice yearly crops of figs a gift of Mother Nature as I do nothing to earn them. The only attention I give to my fig tree, late each autumn after the leaves have fallen, is to hack off any branches that droop too close to the ground so that I can mow the lawn under the tree. They don't seem to be prone to any disease.

Because Nature is so generous, my conscience finally caught up with me and I made efforts to find uses for the figs, apart from feeding them to the children's rabbits, whose appreciation of them is second only to that of the birds.

Over the years I have amassed a collection of fig recipes. This year, for the first time, I have been able to use the entire early summer and mid-summer crops. The birds and rabbits still got their share, but the family managed to use the rest.

Figs are among the earliest fruits cultivated by man. We all know what Adam and Eve covered with fig leaves, though the Book of Genesis doesn't give any information about what they did with the fruit. Presumably it went the same way as the fabled forbidden apple.

The use of fig leaves as clothing by Adam and Eve makes a contribution to the age-old controversy of where the Garden of Eden was located because it must have been in an area where the fig is a native. This is the large arc from Eastern Turkey right around to the north of India. Primitive man apparently cultivated figs because the tree is extremely simple to strike and requires little attention once established.

The early Greeks are said to have received figs from Caria (in Asia Minor) and this explains the Latin name, *Ficus caria.* Like the grape and the olive, the fig was an essential part of Greek culture as well as an important part of their diet.

In Rome, the fig tree was an emblem of the Emperors and the Republic because the city's legendary founder Romulus and his twin brother Remus when abandoned as babies by their mother were raised by a she wolf who kept them in a cave, the entrance of which was sheltered by a fig tree.

Figs were among the earliest fruit trees brought by Europeans to the Americas and Australia. They have distant cousins in Australia, the native Moreton Bay Fig being a true fig, but one whose fruit does not develop to the same extent as *Ficus caria.*

They seem to do well in any climate which is temperate to hot. My tree in Melbourne, which appears to be at least 40 years old, behaves like the original fig of the Middle East in that it crops twice each year.

There is a first light crop in early summer. No further fruit ripens for about a month, then in high summer (mid-to-late February) it starts to bear again and the figs continue to sprout often until mid April.

In the bush a fig tree in a farmyard or orchard will keep pigs, poultry and even cattle happy with windfalls.

The one problem limiting the fig tree's production is birds. My tree attracts scores of native birds, such as curlews and silver eyes, which have acquired a taste for this exotic fruit. I am quite happy to let them have their fill as there is always plenty left for our needs. But anybody who wants to keep the entire crops may throw a light small meshed net over the tree to keep the birds off. A discarded fish trawling net is excellent if you can get one, but make sure you patch up any large holes or some of the smaller birds will sneak through.

Fig Recipes

The first way of preparing figs for the table is simple. Pick ripe figs, give them a wash under cold running water and eat them raw. There are few fruits more delectable than raw sun-ripened figs, their soft purple or dark brown skins containing a mass of pulpy sweet flesh that needs no additions to bring out its unique flavour.

To finish a meal, figs may be eaten raw with cheese. The sweet flavour of the figs complements the tangy flavour of most types of cheese, particularly soft varieties like *brie* or *camembert.* They go well with a glass of port or a full, strong red wine.

Glazed figs

18 small ripe figs
1½ cups red wine
¾ cup sugar
¼ cup water
juice of 1 lemon
¼ cup brandy

Peel figs. Warm water, wine and sugar in saucepan, add figs and cover. Cook over a low heat two or three minutes. Allow to cool slightly for a few minutes. Then, using a spoon with holes in it, carefully lift out figs and place in bowl. Boil the liquid hard until it is reduced considerably.

Remove from heat, mix lemon juice and brandy with it and pour over figs. Allow to cool, refrigerate and serve cold with cream.

Compote of figs

Peel figs, which should be selected for ripeness and equal size. Make a syrup from 1½ cups sugar to 2½ cups water and bring to boil in a large saucepan. Flavour this with vanilla. Poach figs in the syrup for a few minutes. Remove figs and arrange in a serving dish. Pour some of the cooking syrup over them.

Fig tart

Line pie flan with pastry. Bake empty until firm but not burned. Peel figs — about eight or 10 should be sufficient — and soak them in liqueur, overnight if possible. Most kinds of fruit liqueur are fine.

Place figs in flan and cover with apricot jam which has been strained and flavoured with kirsch or some other liqueur. Cook in moderate oven for 30 minutes. Then remove flan, brush the whole tart with beaten egg and replace in oven for about five minutes.

Baked figs

Select slightly under-ripe figs. Don't peel, but remove stalks. Place in oven proof dish, put in a very small amount of water, sprinkle with sugar and bake in the same way as apples. When the figs are soft and caramelly, remove them from the oven. They are delicious served with a dash of cream.

Fig fritters

Peel figs and either halve or quarter them, according to size. Soak them in brandy or any other liqueur and sugar for 30 minutes and drain. Then dip them in a light batter and fry.

Stuffed figs

8 large ripe figs
150 g (5 oz) almonds
50 g (2 oz) castor sugar
1 desertspoon cream cheese

Remove skin from almonds. Keep eight whole nuts to one side and reduce the rest to powder. Mix in sugar and cream cheese and mix thoroughly to form a stiff paste.

Split the figs into quarters, taking care not to separate the pieces completely. Open out the fig quarters and fill with a spoonful of the almond paste. Place a whole almond in the centre of each fig.

SWEETENED DRIED FIGS

Day 1: Select large green figs, cut off stalks and use metal skewer to prick skin in several places. Place in large crockpot or saucepan and cover with brine made in the proportion of 200 g (7 oz) salt to 4 litres (1 gallon) of water.

Day 3: Drain off brine, rinse figs several times in cold fresh water, then cover with fresh water.

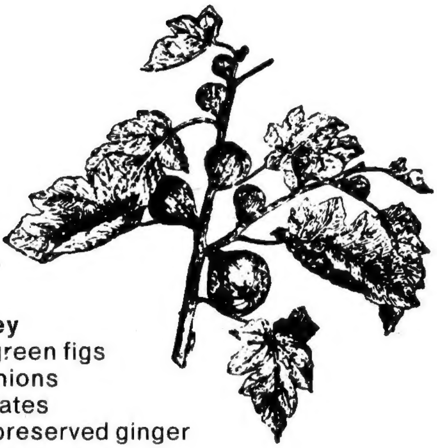
Day 4: Drain off water. Place 4 litres (8 pints) of water in large saucepan and pour in 2.5 kg (6 lbs) of white sugar, stir until sugar is dissolved, place figs in syrup and bring to boil. After syrup has boiled for about one minute, take off heat and let stand.

Day 6: Drain off syrup but retain it. Cut figs in two lengthwise. Place syrup back in saucepan, add another 2.5 kg (6 lbs) of white sugar, stir until dissolved, replace figs and bring to boil. After boiling for several minutes, take off heat and let stand.

Day 8: Drain off syrup, boil syrup, return figs to syrup. Let stand.

Day 10: Drain off syrup, either retain syrup for next batch of dried and preserved figs, or throw it out, or bottle it as a very thin fig jam.

Place figs on trays outside in hot sun, or inside, and allow to dry thoroughly. If outside, it may be necessary to cover with muslin to keep flies away. When thoroughly dry, store in cool but dry place. Will keep for many months.



Green fig chutney

- 1.5 kg (3 lb) green figs
- 500 g (1 lb) onions
- 170 g (6 oz) dates
- 125 g (¼ lb) preserved ginger
- 1 litre (2 pints) vinegar
- 340 g (¾ lb) brown sugar
- 170 g (6 oz) raisins
- ½ level teaspoon Cayenne pepper
- 1 level teaspoon salt

Wash figs, skin onions and cut both into rings. Cut dates and ginger into smallish cubes and place figs, onions, dates and ginger into bowl. Boil vinegar with sugar and pour over other ingredients in bowl. Leave overnight. Next day boil for about three hours until chutney is thick and dark. Place in jars while still hot.

Fig jam

- 1 kg (2 lb) fresh figs
- 500 g (1 lb) tart apples
- juice of 6 medium lemons
- grated rind of 2 lemons
- 1 kg (2 lb) sugar

Wash and slice figs. Peel and slice apples and put both fruits into pan with lemon juice and rind. Cover and cook slowly until fruit is tender. At this stage fruit can be pureed in food blender if smooth textured jam is required. Then replace all fruit in pan, add sugar, bring to boil and boil hard for 15 minutes. Pot while hot. A jam-setting powder can be used instead of apples. However, fig jam will not set without a jelling agent, such as pectin-rich apples or a commercial jelling powder.

This same type of jam can be made in a number of varieties. For variety and different flavours try the recipe above, but substitute 1 kg (2 lb) of figs and 1 kg (2 lb) of diced pineapple for the 2 kg (4 lb) figs in the recipe. Other good combinations are 1 kg (2 lb) fig and 1 kg (2 lb) preserving melon; 2 kg (4 lb) figs and 2 level teaspoons ground ginger — try it with whatever fruit you have at hand. Figs mix well with most fruit in jam.

Fig jelly (sweets)

- 30 g (1 oz) powdered gelatine
- ½ cup water
- 170 g (6 oz) sugar
- juice of ½ lemon
- grated rind & juice of ½ orange
- 30 g (1 oz) almonds or other nuts chopped
- 60 g (2 oz) figs chopped
- cornflour
- icing sugar

Boil half the water and dissolve the gelatine in it. Boil other half of the water and add the sugar, lemon and orange juice, nuts, figs and orange rind and simmer for another 10 minutes. Pour mixture into wetted 6-inch square tin and allow to set for 24 hours. Cut into small squares.

Pickles

By MARY THIRY

After picking onions and gherkins from conventional recipes and finding them too soggy for our taste I tried this method from an Asian cook book.

In Asia there are very few foods that *cannot* be dried or pickled. Using your favourite pickling vinegar and spice recipe (which may be used again and again), tip fresh raw gherkins into bottles, pack tight and cover with the cold seasoned vinegar mixture and seal and store for one month.

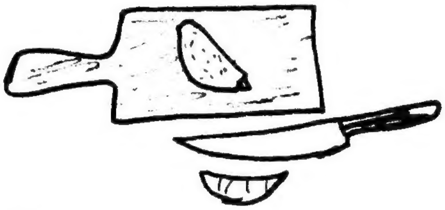
This can be done with onions, beans, carrots, green tomatoes, radish, capsicum and cauliflower.

Pickled eggs

With this method, eggs are always on hand, ready to eat with a salad.

Hard boil as many eggs as you wish. Peel and leave whole. Pack the boiled eggs into jars and pour over previously boiled, cold favourite seasoned vinegar mixture, then seal airtight.

Leave at least one month before using. Hard boiled eggs pickled this way will keep until eaten. Curry can be used as a seasoning so you have a savoury dish always on hand.



Pickled lemons

This is a most inexpensive, refreshing hot weather drink.

Put the lemons into a pot of boiling salted water. Boil one minute only and remove from the pot. This process just softens the skin of the lemons.

Then, with the top of the lemon upright, cut lengthways on four sides. The remainder (core) should contain the seeds. Discard this. Then chop the sides into about four pieces and place them in a large jar, half filling the jar.

Bring to the boil a saline liquid of sufficient quantity to fill the jars, using one tablespoon of salt to each pint quantity to fill the jars, using one tablespoon of salt to each pint of water. Pour this over the lemons — seal and leave to pickle for one month before using.

To serve, place two tablespoons of the liquid and some of the peel in a large glass, add ice and sugar to taste. Fill with cold water and stir to dissolve the sugar.

Soda water instead of plain water is delightful and it is still tasty and thirst quenching without sugar. **Do** eat the peel, it's 'more-ish'.

My favourite vinegar recipe

Boil 2 pints of white vinegar, 1 cup of sugar (or less), 1 teaspoon of salt. Add any spices such as a few peppercorns, cloves, 1 teaspoon ground ginger, 1 teaspoon spice and ½ teaspoon pepper. But let it boil for 10 minutes if adding spices. This isn't necessary if no spices are added. Strain and allow it to cool before using.

Land Lines is a free service for ***Earth Garden*** *readers, who must give their full name and address as proof of their sincerity. They also have the responsibility to thoroughly check all deals.*

Please keep listings to 50 words, plus name and address.

Wanted: Land, about 50 acres, preferably bush, must have creek, in isolated area a long way from sealed roads, electricity, etc. Maximum price $15,000.

Please write: Mark Taylor, 172 Connells Pt Road, Connells Point, Sydney, NSW 2221.

We are selling 138 acres in gum trees near Frankford, Tasmania. Perfect for a retreat, with view over the Western Tiers. Well drained, with easy access to Devonport and beach. Asking price $20,000 with no interest finance available.

Betty & Edward Simpson, PO Yolla, Tasmania, 7325.

land lines

Kangaroo Island: 3000 acres of undulating, easily cultivated naturally grassed, partially cleared country, with river, lake, lagoons, springs and dams, abundant wildlife, mild summer and winter, sure rainfall. Fronting Southern Ocean and adjoining permanent reserve of almost 1 million acres, has been subdivided (Freehold Torrens Title) into 16 lots of approximately 80 acres, rural retreats, surrounding central park and river flats.

Capable of further subdivision to 20 acre holdings if required. Price ranges from $200 to $250 per acre. Water, power, basic foods, building raw materials and temporary accommodation are available at nominal cost. Small deposit finance and on site employment to genuine New Free Staters.

Contact Jeanne & Bob Hill, 'Natures Own', PO Box 71, Port Adelaide, South Australia, 5015.

We need some like-minded people as neighbours and the only block in the area is for sale (the rest is Crown land, tin mining field). The area is the Mt Fox Range, 40 miles south of Ingham, Queensland. It is isolated and the last 6 miles of the road is 4WD only access in the Wet season. The land is an 80 acre Miner's Homestead Lease. It is mainly wooded (bloodwood, lemon scented gum and stringybark) and hilly, but has a cleared flat that has been under cultivation.

The block has a small permanent creek and the biggest and best spring in the area. Climate is tropical, moderated by 2500 ft elevation, which means light frost on a few days in winter and cool nights nearly all year. Price is $15,000.

The owner is Murray Chesson, c/- P.O., Ingham, Qld 4850. Yours, Garry Briggs & Shirley Prout.

"Earthsong" is a proposed new music magazine for common fold — no hype and no superstars. It hopes to be an exchange of ideas for people who write, play, or just listen to music. As well as an array of informative articles, a small 8-track studio will record anyone with original material, with the aim of putting together a tape collection for sale on a co-operative basis.

Send SAE for an information sheet to "Earthsong", PO Patchewollock, Victoria 3491.

There are three 40 acre blocks, forested and with a small creek, quite close to us and we would dearly like to see *Earth Garden* type people purchase these, especially families with young children. They are approximately $20,000 each. We would be delighted to meet anyone interested and to show them around the area. If crafts people were to buy each of these blocks a Craftsmen's Village would be a possibility — Steve is a toymaker. They are very close to the Grandridge Road.

Steve and Paula Horton, Denhams Road, Hallston, via Leongatha, Victoria 3953. Phone (056) 68 5265.

For sale: 100 acres bush with a few clearings in a secluded part of south-east Tasmania. Improvements include two basic but comfortable shacks, a large workshop, 36 established fruit and nut trees with fence and gravity fed water. Good moderate climate, about 40 inch rainfall, close to sea and beahces. Price $23,000 negotiable.

Contact Philip Hesketh, c/- P.O., Nubeena, Tasmania 7184. Phone (003) 50 2255.

We have for sale 5 acres of partly bush/grass, sheltered in mountains around Mt Canobolas, 8 miles from Orange P.O. (about 15 minutes). The house is post World War II fibro, strucsturally sound, but needs redecorating, 2 bedrooms, lounge, kitchen, dining area, bathroom, small hot water system (plug in), septic and enclosed back verandah. Fuel heaters in lounge and kitchen, plug-in electric stove kitchen. Plenty of drinking water on house tank, plus 10,000 gal tank for shower, etc, and small well, both with pumps to pressure tank.

One more room, large shed, fowl house, animal shelter shed, good fences (we have goats!), small orchard with electric fence, large garden area, greenhouse and good soil. Price $40,000 negotiable.

Write Marion & Tony Robinson, 43 Towa Road, Orange, NSW 2800. Phone: (063) 65 3317.

Jane (32), Juergen (38) and Gerard (2) will be moving onto a property halfway between Grafton and Casino in July. There is 1,000 acres with an old house (needs renovation). It's not far from a village, but there are no near neighbour. We would like to find someone interested in staying with us for a while, preferably a single parent with child who would be company for Gerard.

Also if any if person or family would like to rent some land from us for, say, a three year period, this would be possible as we have more than we can use in the short term. Terms negotiable. No dogs or cats, no drugs or dogma, just healthy living and organic farming methods.

If interested, please write to J. & J. Wende, 3/94 Mt Keira Road, Wollongong, NSW 2500.

Tanki (2½) and I (35) are looking for a stable place to settle down. So long as it isn't cold it could be anywhere in or around the east coast. We'd prefer to join a small community (with children) or share land with one or two persons, or families. We'd also consider a small acreage with running water, if cheap enough. We have around $7,000.

I'm a pre-school teacher, keen to start a pre-school wherever we settle. Other interests include organic gardening, especially tropical fruit trees, spinning and home-made music. We live on natural food and would prefer a non-smoking, non-alcoholic community.

If you can help us, please write: Norah Moully, c/- 88 Nicholson Street, Highett, Victoria 3190.

Couple with two daughters (8 and 10 years) would like to buy property, 8 acres or more, preferably with some improvements (dwelling, etc), near coast north from Taree, NSW. Would consider buying part of a larger property. We have no hang-ups (religion, drugs, etc) and seek a peaceful lifestyle in picturesque surroundings.

If you can help, please write: Tony & Fran Daly, c/- Post Office, Dangar Island, NSW 2253.

For sale: 993 acres, with long river frontage, permanent creek and two dams at Suggan Buggan, in East Gippsland, Victoria, about 60 miles from Jindabyne, NSW and 98 miles from Bairnsdale. Approx 250 acres fenced into paddocks. There is a good shearing shed, with plant, irrigation, engine and pipes. Land is freehold, with rates of about $140 annually.

Much of the land has been ploughed and sown to pasture. There is a good, scenic road leading to the snowfields. We are asking $50,000.

Yours sincerely, Mrs E. Watkinson, 98 Goold Street, Bairnsdale, Victoria 3875.

I have a wonderful 12⅛ acres, with three wells of clear underground water, but my husband Bob wants to get a better place. The cottage has barn doors and could be made brighter by letting in windows. It is a long block, running down to a road frontage near an oyster harbour, with chook pens, taps, bird baths, etc. There is fruit all year round except after figs and apples, all different kinds of plums, including two Santa Rose and one Satsuma, Golden orange, chery plum, nectarine, apricots, peach, pears, apples, Cape gooseberry bushes, asparagus, raspberry, mulberry, quince, passionfruit and gourds.

The property isn't on the market, but we are pensioners, so if anyone writes it should stir us up a bit.

Mr & Mrs R. H. Madgen, 'Girrawheen', 95 Thorne Street, Lower King, Albany, Western Australia 6332.

We are an active outdoor couple in our early forties, she French, he Australian. Between us we have experience and qualifications in acupuncture, remedial massage, spinning, weaving, four languages, leather working, carpentry, electrical and structural engineering, furniture making and motor mechanics.

We would like to share these 'skills' with 3-4 others on 100-200 acres of land in an alternative lifestyle environment. Are there any women readers or couples out there who would be interested? Ideally, the land chosen would be rugged, covered with trees, not necessarily isolated, have permanent running creek and would be purchased on an equal ownership basis.

If interested in joining us, please write: Peter & Carel Rangott, CSIRO, P.M.B., Griffith, NSW 2680.

We are a happily married couple, Lesley, 35 and Marsh 41, with six children (3 boys and 3 girls, ranging from 2-16 years). We are non-drinkers and non-smokers and avoid 'junk food'. We would like to acquire land in northern NSW, southern Queensland near coastal area with permanent water and good soil, amongst like-minded people with whom we can exchange skills and knowledge. We can see tremendous advantages in buying land with other people, but feel there are many problems, unless we can have individual titles to our land. We are receptive to ideas and suggestions for buying land co-operatively with about 5-10 families.

Thank you, Lesley & Marsh Bryde, 173 Main Road, Speers Point, NSW 2284.

A small group of artists, writers and crafts people seek more financial members to buy land. $5000 per share. Total membership 12. A practical venture within reach of schools, employment and craft marketing outlet. This is not a real estate subdivision or sophisticated extension of the rat-race. There are no dream homes or title cards. We seek people of co-operative spirit who will be content with modest private living quarters and small garden areas in a forest and coastal environment. No drugs, dogs or cats.

Please write: J. Wolfe, South Coast Forestry Co-operative, Box 431, Eden, NSW 2551.

We are a couple who want to buy land or a share to build our own mudbrick home, also to become as self-sufficient as possible. Can any earth minded people write with advice, or let us visit for work experience and help with your chores (we have a caravan)?

Please write to Raymond & Michelle Green, 2/245 Ballarat Road, Footscray, Victoria, 3011.

I have 12 acres in a well established community near Yandina in south-east Queensland. Two acres are rainforest, about one-third of total cleared. Lots of fruit trees, mostly bearing, including pawpaw, avocado, macadamia, banana, custard apple, pecan, citrus, dwarf peach — plus a good vegetable garden. Two comfortable wooden houses, slow combustion stove, Franklin fireplace, hot water, water tank. I'm asking $20,000 for it.

Contact: Margaret Hutcheson, 116 Louisa Road, Birchgrove, NSW 2041. Phone: (02) 827 1791.

We (two people) would like to buy land, 50 acres or more, in north east NSW — Macksville, Grafton, up to the border — especially around Kyogle, Mt Warning, Tyalgum. Preferred conditions are: permanent water and swimming, minimum 5 acres arable; about 20 acres suit horses; remainder forested; some frost-free arable; without a dwelling; secluded; remote areas okay; non polluted natural bushland surrounds.

We would also consider buying a large block of land, 400 acres or more, with a few other people and subdividing it. A possibility then would be to have part of the land jointly owned as a permanent wildlife reserve.

Please write to Tracy Adams & Gerard Murray, Ringtail Creek Road, C/- PO Tewantin, Qld, 4565.

Who is interested in a block of land in the Armidale (NSW) area? It's 15 minutes by car from Walcha on the Oxley Highway towards Port Macquarie. We are selling 'Illaem', 48 acres, mostly cleared, with a beautiful log hut, a work shed, 2 water tanks (2000 and 1500 gallons). Three sides of it are fenced with the Stony Creek as its fourth boundary. Over 1000 trees have been planted by us. We are asking $22,000 for it.

Anyone who is interested, please contact Niko & Uta Nikolai, C/- Deloraine, Tasmania, 7304.

For sale: 800 acres of natural bushland at Tabulum, northern NSW (between Tenterfield and Casino). Isolated location, yet 30 km from town. Landscape ranging from naturally clear areas to rugged high country. Rainfall is 48-50 points per year; there are intermittent creeks and artisian springs. Price negotiable.

Please call (02) 450 2608, or write to Chris Yunken, 97 Joalah Road, Terry Hills, NSW 2084.

Wanted to buy: 5-10 acres of semi-cleared bush on the coast between Torquay and Lorne, Victoria. Dwelling preferred. Water essential.

Please forward any contacts or comments to Ela, 94 Garden Street, East Geelong, Victoria 3219.

The organic idea

One aker wel compaſt, is worth akers three:
at harueſt thy barne, ſhall declare it to thee.

THOMAS TUSSER, *A hundreth good pointes of husbandrie,* 1557.

Cato hath a devise to make an artificial mucke or compost of, litter, lupine straw, chaffe, beane stalks, leaves and branches both of Mastholme and oke. He saith moreover to the same purpose . . . plucke up ranke weeds, or ground Elder; also Reeke or Sea-grasse, and dead leaves of branches lying rotten under trees: when thou hast so done, strew, and lay a course of them under sheep where they be folded.

PLINY THE ELDER, *Naturall Historie,* 77 AD, translated by Philomel Holland, 1601.

And do not spred the Compost on the Weeds, To make them ranke.

WILLIAM SHAKESPEARE, *The Tragedie of Hamlet,* Act IV, Scene 4 (First Folio), 1623.

I have seen in *France,* poor men cut up heath, and the *Turffe* of the ground, and lay them on an heape, to make *mould* for their barren lands.

SAMUEL HARTLIB, *His Legacie,* 1652.

By Keith Vincent Smith

Like ordinary gardeners or farmers, organic growers are mainly concerned about getting food out of the earth and onto the plate.

We believe that healthy food can only be grown on healthy soil. So we make compost and spread organic mulch to feed the soil which feeds us and all the animals on earth.

Our approach is different because we respect the earth and work within the cycle of nature to put back into the soil the fertility taken from it by growing plants.

Organic growers don't treat the soil as some kind of inert growing medium which merely holds plants in position while they are dosed with artificial fertilisers. We know that soil is alive. It's animal, vegetable and mineral, teeming with micro-organisms, earthworms, moulds and yeasts.

Compost enriches and conditions the soil, providing humus, the vital and complex organic portion which binds the soil together, making sand hold more water and clay retain less water. Humus encourages earthworms which devour decaying organic matter, leaving their rich castings and adding valuable trace elements to the soil as they rub against mineral-containing rocks.

In chemical-based agriculture, or agribusiness, hectares of food plants are being doused with pesticides in heavier and heavier applications as insects develop resistance to them. More chemicals are used to destroy weeds, so that almost everything we eat has been touched by one or another of the vast array of toxic chemicals.

Organic methods rely on beneficial insects and non-toxic sprays, diversity of crops and companion planting to deter insects. In place of chemicals we use natural nutrients such as rock phosphates, liquid seaweed, animal manures, wood ashes, fish emulsion and blood and bone.

We've "gone organic" for many reasons. Some of us because of a new awareness of the environment, some suspicious of science and technology, some with a spiritual outlook; others who are vegetarians, or are concerned at additives to natural foods; for plain commonsense, to save money, or because we think that organically grown fruit and vegetables "just plain tastes better".

What we have in common is a desire to stay healthy and to have normal, happy children in a polluted world.

In Australia there are now hundreds of practical organic farmers, making a good living and saving money by *not* following the chemical line. There are thousands of smallholders and backyard gardeners growing a wide range of vegetables, herbs, nuts and fruits using organic methods.

Their food is grown, not for size or storage consideration, but for freshness and flavour, picked at the optimum point of maturity, when the meal is being prepared. Our tomatoes aren't gassed, nor are our oranges and capsicums polished with wax — though somehow the colour always seems to be better than those you see in the shops and supermarkets.

What can you do? Join one of the organic gardening groups which we list in *Earth Garden,* start your own food producing garden at home or join with others in a community allotment.

Make compost or sheet mulch gardens from the information provided here and try to employ natural pest controls. You will be helping, in a small way, to make the world a better place.

Indolent farmer: Yes, Johnny, I calc'late we must stratin out that manure. We can't git the barn-door open any more.
Sensible son; Why don't ye move the barn, dad? It'll be a heap easier.
From *The Pictorial Home and Farm Manual,* 1885.

THE HISTORICAL BASIS OF COMPOST

The discovery of the value of animal manures helped to make possible the transition between nomadic herders and settled farmers. Before that grains were planted until the soil was exhausted, when the tribe would move to another site.

By 3000 BC manure was used to fertilise crops in Egypt and also in China. It was found that animals fed on crop stubble would ensure fertility in the field and crop rotations began to be used.

In the management of manure what we would today call composting was known and practised by the Greeks and Romans who used animal wastes, leaves, weeds, sewerage, sweepings and food scraps. The resulting mixture was used to mulch or top dress the soil. "The Earth neither grows old, nor wears out if it be dunged", wrote Columella in *On Husbandry,* about 40 BC. he also recorded green manuring with beans, lupins and other legumes turned into the soil.

By the Middle Ages the principle of making compost was accepted and the word came into use in English in various forms, such as *compast* and *compass* from Latin through Medieval French.

From the 16th century onwards the methods of using *dung* or *muck* (manure) and other natural fertilisers were discussed in gardening books. John Reid gave an excellent account of a practical pit compost method in *The Scots Gard'ner* in 1683 (see quote).

The principle that earthworms were beneficial to soils only began to be realised in the mid-19th century and was not generally accepted until after Charles Darwin's publication of *The Formation of Vegetable Mould Through the Action of Earthworms, with Observations on Their Habits,* after 40 years study of the subject, in 1881.

For preparing my composts, I use a pit (wherein sometimes I make a hotbed) oblong, about 4 foot deep of length and breadth, as I can get dungs, Vegetables, and soils to fill it: here to lay all Kindes or sorts with *Stratums* of Earth, as horse, neat (cattle), Sheep, Pigeons, and Poultrie dung, ferns, weeds, leaves, foot ashes, sticks, sawdust, feathers, hair, horns, bones, urine, scouring of pondes, ditches, blood, pickle, brine, sea-water; the cleaning of House and Office, etc.

Let them ly a year at least, but not above two: then take them out and there Stirre, Air, mingle and work them with fresh Earth or by themselves, as you have occassion, till they become sweet and of an agreeable scent; (yet retaining their vertue) this frees them from the noxious qualities they otherwise retaine, and consequently not so apt to gender or produce Worms, Weeds, and Mushrooms instead of wholsome and pleasant plants, fruits, and Roots for the table.

JOHN REID, *The Scots Gard'ner,* 1683.

Compost is rich made Mold, compounded with choice Mold, rotten *Dung,* and other enriching ingredients.

JOHN EVELYN, *The Compleate Gard'ner,* 1693.

The gardens of the cottages in these countries (the Netherlands) are undoubtedly better managed and more productive than those of any other country; no man who has a cottage is without a garden attached; often small, but rendered useful to a poor family by the high degree of culture given to it. Every available particle of matter capable of acting as manure is assiduously collected, and thrown into a neat ridge, cone or bed, which is turned over frequently, and when sufficiently fermented and ameliorated, applied to the soil.

JOHN CLAUDIUS LOUDON, *An encyclopaedia of Gardening,* 1824.

Earthworms were thought to be injurious by John Reid, though he did realise that they were no longer present in *fully decayed* compost (because they feed on decomposing vegetable matter).

The first compost made in Australia that we know about was in a pit built by James Ruse, the Colony's first self-supporting farmer, in 1789. He threw into the pit straw and "everything which I think will rot and turn into manure", Ruse told Captain Watkin Tench at his farm at Rose Hill (Parramatta) near Sydney.

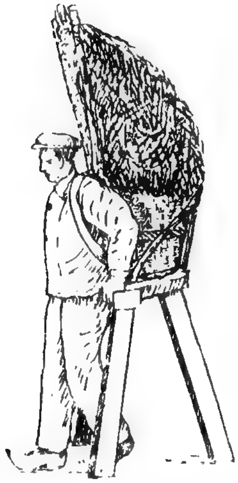
In the mid-19th century "specialist" composts were mixed for various crops, leading to later confusion about the meaning of the word because of its association with potting soil mixtures like John Innes composts.

Until around this time, of course, all agricultural crops and kitchen gardens were fertilised by natural means. The use of guano and then chemicals like sulphate of ammonia and superphosphate ushered in artificial fertilisers which were increasingly made and used during the industrial revolution.

A thorough and scientific account of composting methods with an awareness of the heat generated, the chemical reactions and resulting humus was outlined in *The Gardeners' Chronicle* by Prof Charles Sprengel, a German scientist, in a series of articles titled *On organic mineral manures,* during August and September, 1842.

These articles make interesting reading but are too long-winded to reproduce here, though Sprengel makes many good points, for example: "By mixing different substances and putting them into heaps, their more perfect combination is secured by the heat thus generaged. If, on the contrary, these substances are carried unprepared upon the land, they cannot come into close contact, and there is no generation of heat, which is such a powerful aid of chemical combinations."

And: "By the use of compost, weak crops may be rapidly improved, because it can be applied as top-dressing even when plants have attained a considerable size. Compost always contains much perfect vegetable nourishment, which, as can be at once received by the roots, improves vegetation speedily."



French market gardener about to pick up a manure basket or *hotte* from a stand called a *chargeoir* to spread in narrow garden beds — paths were too narrow for wheelbarrows

From *French Market-Gardening*, By John Weather, 1909

Sir Albert Howard first outlined the *Indore* method in his book *The Waste Product of Agriculture* in 1931. It remains the standard composting technique today, with variations. India was the testing ground for Howard's theories which evolved into an integrated system of agriculture outlined in *An agricultural testament* in 1940, the pioneering work of organic growing.

He influenced Jerome Irving Rodale, who took the organic message to the United States, issuing the first copy of *Organic Farming and Gardening* magazine in May, 1942.

J. I. Rodale died in 1971. His son Robert now publishes *Organic Gardening, The New Farm, Compost Science* and *Prevention* and a range of books which have greatly influenced the ideas and outlook of four generations of Americans.

MAKING COMPOST

Making compost is at the basis of organic gardening. Compost is the perfect natural fertiliser. Ultimately, compost applied to the soil is broken down to the sweet smelling, crumbly, friable dark substance we call humus.

In nature, the ceaseless decay of vegetation on the forest floor is a soil-building process. Leaves fall, trees rot, animal and insect remains decay, giving new life to the soil.

In composting, this process is speeded up by the management of these organic wastes. Anything that has ever lived can go into the compost heap, which provides a perfect example of recycling.

You put in: kitchen wastes of all kinds, vegetable scraps and peelings, fruit skins, melon rinds, apple cores, nuts, shells, tea leaves, coffee grounds, weeds, grass mowings, hair, rags, eggshells, leaves, herbs, bracken, comfrey, straw, wood ash, seaweed, rotted sawdust, any animal manure or urine and even wet, torn-up newspapers.

You take out: rich, decayed compost, containing carbon and nitrogen, ready to use as a top-grade fertiliser in your vegetable garden, for flower growing, in the orchard, for potting or for raising seedlings.

In the soft, warm bosom of a decaying compost heap, a transformation from life to death and back again is taking place. Life is leaving the living plants of yesterday, but in their death these leaves and stalks pass on their vitality to the coming generations of future seasons. Here in a dank and mouldy pile the wheel of life is turning.

J. I. RODALE in *Encyclopaedia of Organic Gardening.*

Don't put in: Metal, milk bottle tops, china, bulk paper, nylon, plastics, grease or animal fat, petrol, paint, very thick branches or plants sprayed with weed killers or other chemicals.

This is where the good management of the compost comes in. Organic materials aren't simply shoved in a pile and left to rot. They must be built up into a heap (or placed in a pit, box or bin) in layers. This promotes fermentation, heat and the biological activity of *thermophiles.*

The breakdown of organic matter is also accelerated by adding "activators" high in nitrogen content, like animal manures, a sprinkling of blood and bone, seaweed fertiliser or a layer of grass clippings.

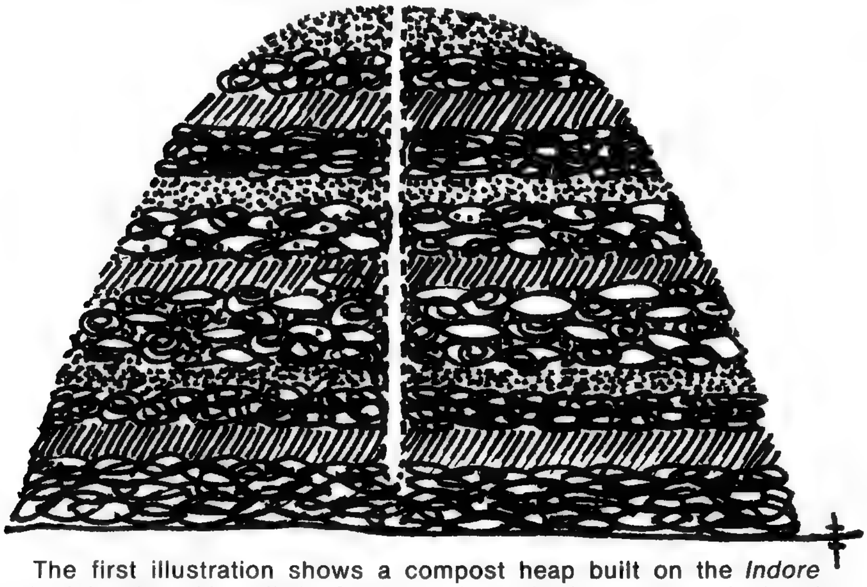
A well made compost heap should become hot within a day of being made and let out steam on a cold morning. The heat at the centre should reach a temperature of 65°C in a few days — almost too hot to touch. Otherwise you've got a rubbish heap full of slaters (wood lice) which will either dry up or rot to a sloppy mess that isn't compost.

Always build your compost on the soil, so that earthworms can get at it, never on brick or concrete. Start with a layer of coarse material like straw at the base to about 5 inches, as this allows air to circulate at the bottom of the heap.

The ideal next layer is animal manure or kitchen wastes. Then build up in different layers of about two inches each with the ingredients you have at hand. I've found that a sprinkle of lime encourages earthworms and sweetens the mass of the heap.

TYPICAL INDORE HEAP

remove stake to aerate heap



The first illustration shows a compost heap built on the *Indore* method developed in India by Sir Albert Howard, who was an agricultural adviser to the Indian State of Indore from 1924-1931. Sir Albert is often called the "father of organic growing" and it was his research and writings which caused an upsurge of interest in non-chemical farming in the 1940s.

A heap of this kind, about three-to-five feet in height would typically be built up in layers, starting at the bottom: soil, coarse plants, manure, kitchen vegetable scraps, a layer of soil, or a sprinkle of lime, greens like weeds, spent flowers, plant stems, manure again, grass clippings, wood ash, soil, green stuff, kitchen wastes, manure and so on to a covering of soil on top.

Every couple of layers could be an activating substance such as dolomite, fowl manure, fish meal, blood and bone, or lime, to speed up decomposition.

Build from the sides inwards and add kitchen wastes each day once the heap has started, by digging into the middle. Weeds should first be wilted in the sun, then dug into the middle of the heap, where the high temperature should destroy weed seeds and plant pathogens.

RECYCLING

Even in the suburbs, in our street, people are starting to realise the importance of recycling. Our own household waste disappears this way.

1. Organic materials from the kitchen and garden and winter fire ashes go into the compost heap. Some newspaper is used for sheet mulching.
2. Cardboard, paper, newspapers and magazines are collected about every six weeks. We get a printed notice a day or two ahead and leave the papers at the front of the house.
3. Glass jars are used for storing dried food. Bottles are collected regularly every two weeks. Left at front of house.
4. Waxed cartons, plastic packaging etc, is burnt in the incinerator. Ashes go to compost. In summer, gum tree twigs and leaves run the Hibachi barbecue. Tree bark goes on to garden paths.
5. Soft drink and beer cans (we do have them, for example after a party) are accumulated by Melissa who gets 2 cents per can when she takes them to the "cash-a-can" depot.
6. Non-recyclable waste, mainly meat scraps, bones, heavy plastic containers, a few food tins and so on go into the garbage can, which is collected twice weekly and is rarely half full (but we pay for it). The previous residents here used to flatten the cans and bury them in the ground. We keep digging them up in the garden.

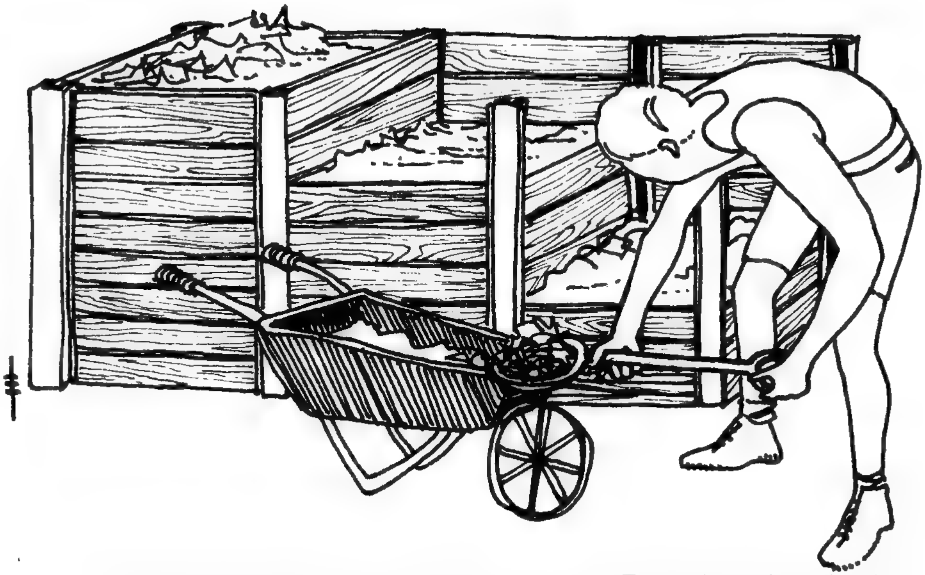
PERMANENT COMPOST BINS

A series of three bins is ideal for a permanent management area for compost.

The first box at left is the largest and is used to accumulate waste materials. The second is not as wide and is used to build up the correct layers of materials and the almost broken down compost is turned into the third bin at right to mature after about five weeks.

The reason for the diminishing box sizes is that the compost shrinks and compacts as it decays. Build the boxes on bare earth and loosen the soil before adding organic material to encourage earthworms.

See back cover.



Watering the compost heap is important. Try to keep it moist, but never sodden because this will exclude air. On the other hand a dry heap of wastes will not decompose at all. The ideal is to keep your compost ingredients as damp as a freshly squeezed sponge.

Pierce the heap with a crowbar or wooden stake driven in at the top, or build it up around vertical posts and remove them to leave an air "chimney" for ventilation as shown.

This is an *aerobic* method of making compost, which means it is open to the air and to air-breathing microbes and bacteria which do all the work in the compost heap.

An *anaerobic* compost heap is made along the same lines, but covered tightly when finished with a black plastic cover which holds in moisture and keeps out air.

The successful aerobic compost pile, then, needs three things: (1) a good mixture of materials, preferably broken up into small pieces; (2) plenty of air; and (3) the right amount of water. Animal manure or another form of nitrogen-containing activator is essential.

Turning the heap every few weeks lets in more air. After heating for a week or so, the heap should shrink in size as material becomes looser and more fragmented. Compost prepared in this way should be ready in about six weeks.

BOXES, BINS & BARRELS

Just as there are many ways of making compost, there also seems to be no limit to the ingenuity displayed in making containers for composting.

For years organic gardeners have been making bins from chicken wire and discarded lumber, bricks and concrete blocks, scrap wood and bits of wire, old garbage bins and petrol drums.

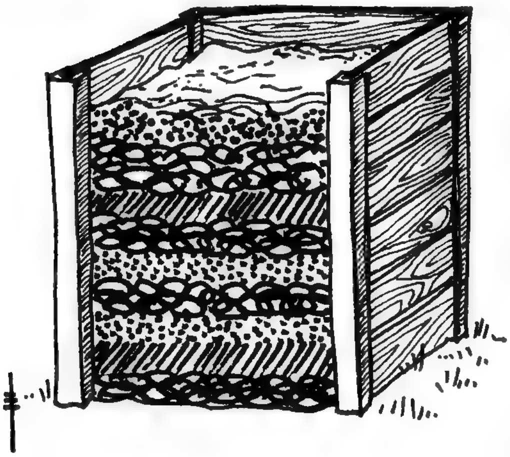
A compost box like the one shown looks tidy in your backyard and holds in the heat of the pile. All that is needed is a simple box without a base or top. It can easily be made from an old packing case, scrap wood or wooden pallets.

Instructions for making a wooden box like the one shown was given in the article *Making compost* by Lawrence D. Hills in Earth Garden 22-3 (Access 1). Loose boards may be inserted into slots at the front of the box.

You can make a compost container of four wooden stakes and chicken wire in a square or circle, but in this case you should line the insides with paper, cardboard or underfelt to protect the heap from drying winds.

Timber framed corrugated iron or fibro siding makes a solid box, while a circle or square of bricks or concrete blocks does not require any mortar. An old 44-gallon petrol drum, well cleaned, and punched all over with holes for aeration, may be supported so that it can be turned each day to speed up the heating process.

WOODEN COMPOST BOX



PIT COMPOSTING

A pit for composting is unobtrusive and will fit into a corner of the garden. It should be about one metre square and ½-metre to one metre deep.

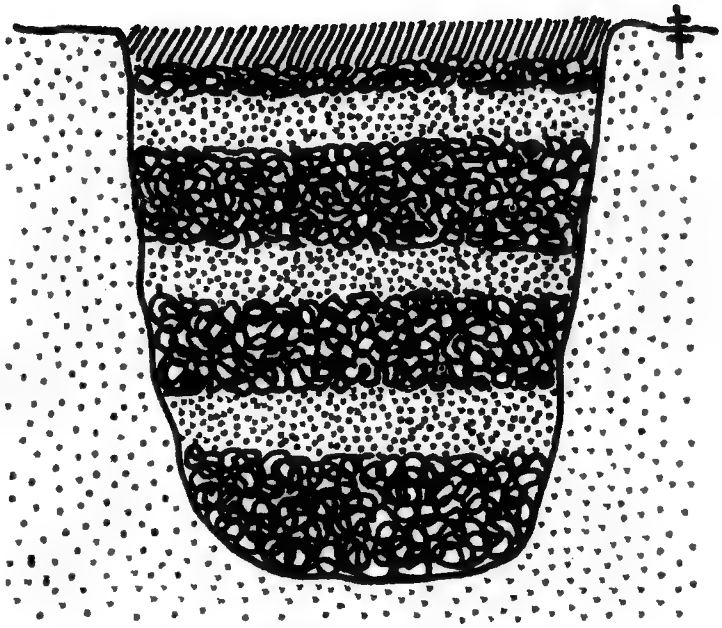
The sides keep the underground compost "heap" warm, accelerating the breakdown of organic matter even in cool climates or in winter.

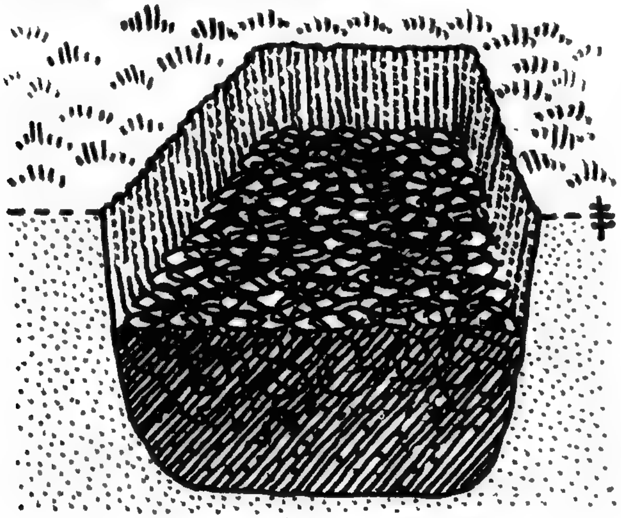
Into the pit, you put weeds, leaves, grass clippings, sawdust, fowl, cow or horse manure, lime and kitchen wastes, covering each layer of organic matter with one of soil. Include some prunings or thicker material for aeration, or put stakes in the pit and remove them after it is full to provide air "chimneys".

In the tropics, a compost pit should rot down very quickly — within a few weeks. Dig out the compost and fork it into the garden. Earthworms are attracted to the decomposing materials in a pit and help to accelerate the breakdown of materials.

To prevent the leaching out of valuable nutrient liquids you may build a permanent compost pit from concrete blocks or bricks. Cover the floor with 4-5 inches of soil and introduce earthworms which will multiply quickly.

On the farm scale, a permanent compost pit is useful. It will take crop residues and animal bedding and litter. You may arrange a drainage system to channel animal urine into the pit.





TRENCH COMPOSTING

Simply dig a trench about one foot deep and the same width. Put in vegetable scraps, peelings, tea leaves and other organic materials. Cover with 4 inches of soil.

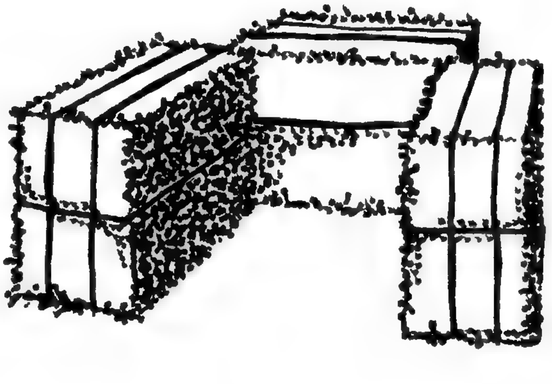
Trench composting is ideal for the lazy gardener. It is quick and easy and encourages earthworms. The soil covering helps the organic matter to decompose in about two to three months, enriching your garden.

The trench may be dug fairly close to a row of growing plants. You can also make a series of small compost "holes", filled with kitchen scraps and covered with soil. Grow plants like pumpkins, zucchini or cucumbers when the materials are fully broken down.

HAYBALE COMPOST

A compost container made of straw or hay bales is naturally "insulated", keeps organic matter heated and it's biodegradable — finally becoming a part of the compost itself!

You may be able to get spoiled hay, which contains more nitrogen than straw, from horse or cattle farms. It was fairly cheap before the drought.



FARM COMPOST

We make our own compost with a bulldozer. We sweep up the scrub and weeds into a heap, add a dead cow or the like and crush it down with the 'dozer tracks.

In 12 months we have a vast heap of compost — no turning, no wooden boxes. Any stuff not broken down is pushed into the next heap and acts as an inoculant.

James & Jill McGuire, Kurrajong, NSW.

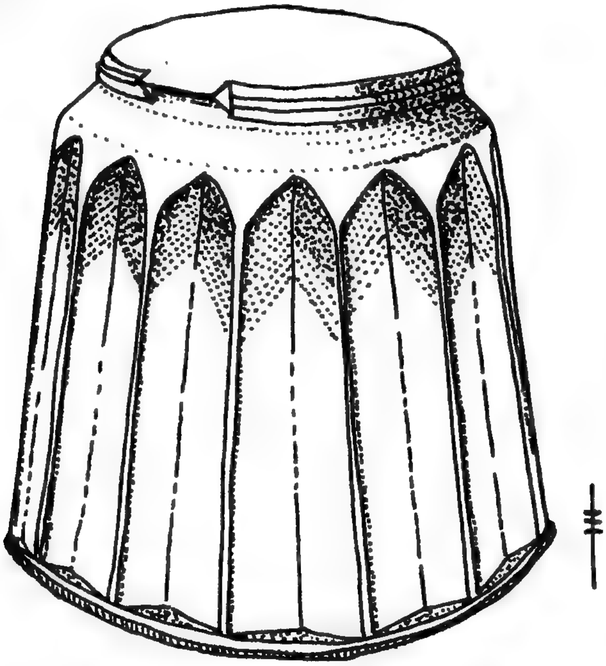
THE GEDYE BIN

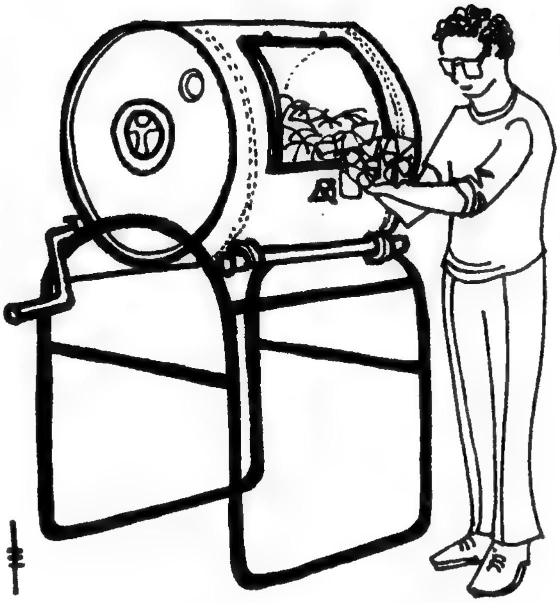
The neat green polyethylene bin with its fluted sides has become a familiar sight as suburban gardeners begin to realise the importance of making compost.

Gedye bins are sealed at the top with a clip-on lid, but open to the soil (and earthworms) at the bottom, so they are fly and vermin proof and don't smell.

Unlike open compost the bins will take meat and bones as well as vegetable wastes. The process is semi-aerobic, taking a 10 week "curing period" to decompose after the bin is filled. You need to add soil to cover the various layers, sawdust to absorb liquids, also lime or dolomite.

The makers suggest that blood and bone also be added.





TUMBLER DRUMS

Shredded or pulverised matter with an activator and sawdust in a compost tumbler drum can produce the famous 14-day "fast" compost.

Breakdown is rapid because turning the drum a few times each day disperses the heat from the centre of the decaying pile. Sawdust absorbs the liquid wastes often lost in open compost heaps and pits. You need to add an activator like fowl manure, bone meal or dried blood, or four parts of grass clippings to one of sawdust.

Drawbacks: You must shred the material or chop it finely and the tumbler drum must be full — and it holds five wheelbarrow loads!

Pests, Predators and Pesticides

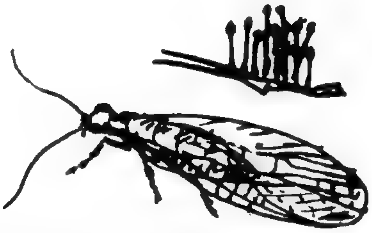
Some alternatives to synthetic pesticides.

Jeanette Conacher, 2nd edition (revised), Organic Growers' Association, WA, 1980, 120 pages, illustrated. Price $3.50 posted from OGAWA, PO Box 213, Wembley, WA, 6014.

This booklet takes organic growing a step forward from the basics of compost and mulch to good garden management without using or abusing synthetic pesticides. Every organic gardener should have a copy.

There is a history and details of chemical treatments and their dangers, but the core of the book is a "rogues' gallery" of the destructive chewers and suckers which scourge our gardens in their desire to eat our plants before we can harvest them. There they are, in outline drawings, with a description of each, the crops they affect and suggested treatments or controls.

After you get to know your enemies, you meet some of their parasites and predators, learn some of the biological controls of pathogens, plant repellants, traps and recipes for organic sprays, like the famous garlic spray, vegemite to attract lacewings, oil sprays and many others.



But, warns Jeanette, consider first of all *"Do I really need to spray at all."* She reminds us that even botanical sprays may be toxic and we should use them only after other methods have failed. Highly recommended.

Jeanette Conacher is a hard worker for organic ideals. She is also the editor of the *Organic Growers' Association WA* published quarterly, this little magazine is packed with tips and hints for organic growing and has an excellent seed bank for members. Price $6.00 annually from the address above.

Rich, ripe result

Like good soil, the compost heap is teeming with an array of micro-organisms which, with heat loving bacteria *(thermophiles),* enzymes and fungi, help to break down the mass of cellulose, or plant fibre.

These bacteria need energy and fuel or growth food — carbohydrates and proteins — just as we humans do. They draw this without trouble when there is a correct balance between the plant matter (carbon) and animal manures (nitrogen) in the compost.

In a well managed compost this *carbon-nitrogen ratio,* as it is called, should be at least 10:1 as it is in good garden soil, but the *ideal* C:N ratio is 25:1. If there is not enough nitrogen present in the compost (manure or other activator), decay is slow. If there is too much nitrogen, smelly-ammonia is discharged, with consequent *loss* of nitrogen.

A sprinkling of lime encourages bacteria called *Actobacter,* which are able to "fix" nitrogen from the atmosphere, adding it to the compost, even from their dead bodies.

Bio-dynamic compost

In the Bio-dynamic method, compost is closely managed, with the aim being properly ripened compost rather than crude organic residues.

It is suggested that the mixture of organic materials be made up of roughly 70 per cent vegetable matter such as weeds, lawn clippings, etc, 20 per cent manure and 10 per cent soil. The pile is usually treated with Bio-dynamic Preparations 502-507 or a BD starter.

Two works worth consulting are: *Composting, What it is, How it is made, What it does,* by H. H. Koepf (Bio-dynamics, USA, 1966) and *The Pfeiffer Garden Book* (bio-dynamic Farming and Gardening Assoc, USA, 1967).

Minerals

Australian soils are badly deficient in minerals (especially phosphorus) and trace elements. Eucalypts and other native plants have adapted to this, but these nutrients are essential for the growth of our vegetables and flowers, most of which have been introduced from abroad.

A well balanced compost will restore the nitrogen (N), phosphorus (P) and potassium (K) taken from the soil by plants as they grow. But if the soil is already deficient in minerals and trace elements, the compost made *only* from plants or manures on that site will also be deficient in them.

The answer is to use a diversity of organic materials in the compost, or to improve the soil by adding natural rock fertilisers, such as dolomite, rock phosphate, ground limestone or calcium either directly, or via the compost.

Pulversied oyster shells or egg shells will add calcium, while seaweed (or liquid seaweed fertiliser) will add trace elements such as copper, magnesium and iodine.

Organic matter in the compost heap helps to release nutrients which are usually "locked up" in these insoluble fertilisers.

A mixed mineral fertiliser, like *Natures Own,* which contains phosphate rock, dolomite, gypsum, potash, ores of copper, zinc and manganese and nitrogen as urea, would supply most deficiencies and provide minerals for bacteria, earthworms and plant roots. This is marketed by Mineral Fertilisers Pty Ltd, Hendon Industrial Park, Tapleys Hill Road, Hendon, SA, 5014 (send SAE if inquiring).

The table shows some of the organic materials for compost with their N-P-K percentages.

Organic sources of Nitrogen (N), Phosphorus (P) and Potassium (K)

Organic Material

	N	P	K
	%	%	%
coffee grounds (dried)	1.99	0.36	0.67
cottonseed	3.15	1.25	1.15
cowpeas (green stalks)	0.45	0.12	0.45
eggshells	1.19	0.38	0.14
fish scraps (fresh)	2-7.5	1.5-6	—
human hair	12-16	—	—
ground leather	10-12	—	—
lobster shells	4.60	3.52	—
lucerne hay	2.45	0.50	2.10
milk	0.50	0.30	0.18
peanut shells	0.80	0.15	0.50
pine needles	0.46	0.12	0.03
seaweed	1.68	0.75	4.93
timothy hay	4.00	0.55	1.00
tomato leaves	0.35	0.10	0.40
wheat straw	0.50	0.15	0.60

Source: **How to Grow Vegetables and Fruits by the Organic Method** (Rodale Press).

	N	P	K
	%	%	%
Manures (fresh)*			
cattle	0.29	0.17	0.10
duck	1.12	1.44	0.49
horse	0.44	0.17	0.35
pig	0.60	0.41	0.13
pigeon	4.19	2.24	1.41
poultry	1.63	1.54	0.85
blood & bone	6.00	8.00	—
bonemeal	4.00	21.00	0.20
wood ash	—	1.50	7.00

Source: **The Complete Book of Composting** (Rodale Press).

* Dried manures contain amounts up to five times higher in Nitrogen, Phosphoric acid and Potash.

Organic methods for the West

BY JEANETTE CONACHER

Western Australia faces a number of problems which affect growing conditions. These vary within the State due to the wide range of climatic conditions — from the temperate south west to the tropical north and arid interior.

Since over 80 per cent of the population of Western Australia lives in this south western corner, this is the area we will focus upon.

For the most part this region experiences a hot, arid climate for six months of the year and summer temperatures may exceed 30°C for over 100 days each year.

The wheatbelt area receives an annual average rainfall of 300-500mm, with over 70 per cent of this falling during the winter months of May to October. Potential evaporation rates range from 1800-2200mm annually. Along the southern and south west coastlines these figures are somewhat modified by sea breezes and high humidity.

During summer, growers have to contend with high moisture losses, problems of wind and sunburn, high surface soil temperatures, dessication and possibly wind erosion. Metropolitan gardens, market gardens, orchards and some farming areas are therefore very dependent on heavy and frequent summer irrigation.

Soils are basically infertile. On the one hand, laterised wheatbelt soils are old, heavily leached and generally acidic. On the other hand most coastal plain soils are recent quartz sands which are very low in mineral and organic matter content.

The soil fertility problem has been worsened by the clearing of native vegetation for agriculture. The loss of this bushland, with its incredibly rich and unique flora and fauna associations which are adapted to our harsh conditions, interferes with natural nutrient recycling processes.

In order to meet the nutrient-hungry demands of introduced crops unsuited to the seasonally antagonistic climate and deficient soils, a grower has to increase the fertility of the soil through the addition of either synthetic chemicals (which, in some cases, amounts to almost pure hydroponics), or organic materials.

Increasing water and soil salinity is another serious problem. In the metropolitan area, groundwater used for drinking is under threat from fertiliser and pesticide pollutants, as well as from other sources, such as sewage and industrial wastes.

Scheme bore water contains high levels of chlorides and sodium, amongst a range of other chemicals, and these may affect sensitive crops such as beans, potatoes, citrus, avocadoes and some nut trees. There is evidence that groundwater salinity in some suburban bores is increasing.

Further south, salinity in the Wellington dam has caused problems with irrigated crops, especially clovers and potatoes. More serious still is the steadily increasing salinisation of soils and water in the wheatbelt. The equivalent of 250 wheatbelt farms are now salt-affected and unproductive. This problem is directly related to the clearing of natural vegetation.

There are other problems, not unique to semi-arid environments, but in evidence in Australia and all around the world, related to the side-effects of agricultural chemicals.

These may include eutrophication of water bodies from excess phosphate and nitrate inputs, and associated algal blooms and deoxygenation of water; accumulation of pesticides and other toxic materials in soils and water, some with the potential to move into food chains or harm human health; and problems from insect resistance to a wide range of pesticides.

Most organic gardeners and farmers in Australia will have discovered that many excellent organic publications are not suited to our harsh summer conditions. These books certainly supply us with a wealth of ideas and techniques, but direct transference is not always possible or perhaps suitable as, for example, with herbal ley rotations or intensive livestock and crop associations.

With long, hot summer months it is vital to maintain some sort of protective cover on the soil both in the garden and on the farm. This cover may take the form of grasses, plant residues, or in some cases, stones. Thus soils are protected from wind and water erosion and soil moisture losses. Soil micro-organisms are also protected and, if necessary, a supplementary form of summer feed can be made available to stock from crop stubble.

Our experience in Western Australia has been that modifications to traditional organic systems can be made, and successfully so. These recommendations and suggestions come from discussions with backyard gardeners, orchadists and farmers.

They take into account the basic objectives of organic growers: to raise healthy plants, animals and humans; to reduce the use of non-renewable resources and increase the use of recyclable materials, particularly those organic in origin; to work with nature and not against it; and to recognise that the physical and human environment are inextricably inter-related.

ORGANIC GROWING IN A SEMI-ARID ENVIRONMENT

1. Building up organic matter in the soil.

This can be achieved by the addition of animal manures, compost, crop residues, cover crops, green manure crops and, where available, through the use of sewage sludge, recycled organic municipal wastes and organic industrial wastes.

Nutrient levels may also be enhanced through the addition of seaweed (or liquid concentrates) and rock minerals, such as dolomite, rock phosphate, greensand and so on.

2. Careful attention to sound management techniques.

Crop rotations and inter-cropping, including legumes in the cycle, are recommended as opposed to monocultural (single crop) methods.

The use of recommended soil and water conservation techniques, such as protection of the topsoil with crops or stubble, contouring, chisel ploughing and *Keyline* methods are important.

Reduction in the use of chemicals likely to pollute water bodies, move into food chains, or affect human health is recommended. Use of integrated pest management techniques including biological control is increasingly desirable as pest resistances increase.

Tree planting of suitable species can be employed to control water movements and provide shade for stock and habitats for beneficial predators.

3. Explore the use of suitable crop species.

If possible, try to experiment with heat tolerant plants. New Zealand spinach, for example, does a lot better than silver beet during hot months. Other heat tolerant plants include Jerusalem artichokes, asparagus, squash, tomatoes, eggplant and capsicum.

Hardy perennials, such as the Seven year bean *(Dolichos lablab)* are useful additions to the garden. A number of Mediterranean tree crops, such as cork oak, carob or olive have diverse uses and adapt well to dry conditions.

4. Provision of summer shade.

It may be necessary to experiment here, but some Western Australian organic growers have found that light shade over more heat sensitive vegetables works well.

Light frames made from recycled venetian blinds are very useful and can be easily removed from a pergola or frame during the winter. Alternatively, plants such as squash, climbing beans, grapes and even tomatoes, may be trained over a frame to protect plants such as summer lettuce, herbs and so on underneath.

5. Watering regimes.

As a rule, a good deep watering once or twice a week to encourage strong deep root development and to flush excess salts further down the soil profile is desirable.

Frequent light waterings only encourage surface root development and thus increase the likelihood of plant stress. Try to avoid watering during the day, especially on hot days, as most of the water used will be evaporated. Not only is this wasteful, but it also increases the possibility of plants being burnt or suffering from salt damage.

Trickle watering for the most part is efficient, economical and convenient, but it may cause salt accumulations near the soil surface and saturated zones around the micro-tubing may encourage the development of rot problems in some plant species.

6. Mulching.

In addition to building up organic matter in the soil *(see 1. above)*, the use of a range of mulching materials during the summer months is highly recommended. These may include meadow hay (but watch out for weed problems), lucerne, straw or oats hay, dry crop residues (providing they are disease free), leaves, sawdust, dry grass clippings, shredded paper (not coloured paper) and many other materials.

Plastic is not always suitable as it tends to restrict important gaseous exchanges at the soil surface. It may be advisable to use a dusting of blood and bone or animal manure to overcome the potential problem of denitrification of the soil.

The advantages of using summer mulches include: the supression of weeds, lowering of surface soil temperatures, conservation of soil moisture, addition of extra nutrients, protection of shallow rooted plant species and encouragement of soil microbes and earthworm activity.

7. Compost tumblers and other appliances.

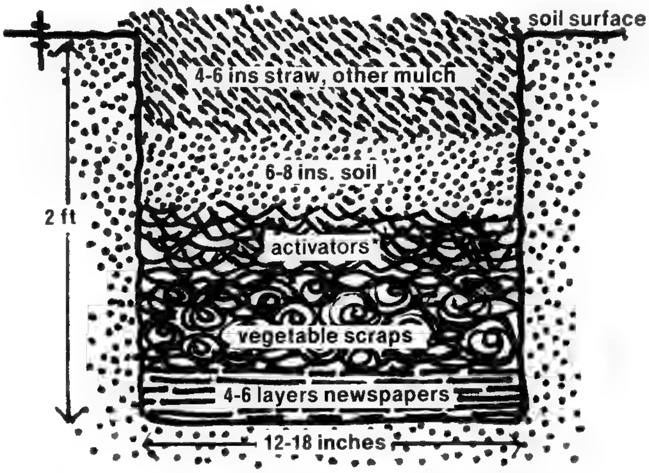
There are many devices you can make or buy to help you produce compost and whichever is selected will depend on your own particular needs. Good, low cost tumblers can be made from 44 or 80-gallon drums.

The tumbler has been found to be very effective in producing a good quality material in a short time, it enables high temperatures to be reached in order to kill harmful pathogens and helps to control fly breeding sites.

A good mixture to use in the tumbler is four parts of fresh lawn clippings to one part of buzzer chips (or sawdust). A little animal manure can be added, but generally this is not necessary. Many other combinations of material are possible.

Obviously, the wider the range of materials you use the better the quality of the final product. Suggested ratios of materials are listed in Kevin Handreck's excellent CSIRO publication, *Composting*.

SWINDELL COMPOST METHOD



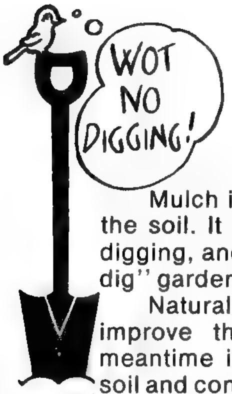
* seaweed, comfrey, blood & bone rock phosphate (dusting)

This method has been evolved by an organic gardener in Western Australia with the aim of reducing fly breeding problems and of coping with day-to-day wastes.

It is possible to plant on top of the small pit within 3-4 weeks. A small pit about 2ft deep and 18 inches wide is dug and filled in the manner illustrated.

These are a few hints that should help growers in semi-arid areas. A good deal may also depend on the resources available to you and to some extent on individual ingenuity.

Jeanette Conacher is editor of the quarterly journal of the Organic Growers' Association, WA (see page 16).


WOT NO DIGGING!

Mulch it instead!

Mulch is a layer of organic matter placed on top of the soil. It cuts down on hard work, like weeding and digging, and is the basis of the various methods of "no dig" gardening.

Natural mulch will eventually break down and improve the humus content of your soil. In the meantime it will maintain an even temperature in the soil and conserve its moisture.

A thick mulch will control weeds by smothering them. If weeds appear, they may be easily pulled out because soil under mulch is loose. In winter, mulch acts like a blanket, protecting your plants from cold.

Traditionally, mulching has been used in growing crops such as strawberries (pine needles or rotted sawdust are ideal for this) or to protect sprawling runners like watermelon, rockmelon, squash, pumpkin and cucumber.

Suggested materials for mulching include old hay, straw, sawdust, woodchips, shredded bark, grass clippings, leaves, newspapers, seaweed, stones and peat moss. Industrial wastes such as hops, cocoa beans and peanut hulls are also useful.

Spread the mulch evenly over the surface of the soil between the rows of existing gardens around plants and seedlings which have been established. Lift the surface and dig down to plant tubers, but smaller seeds should be planted on top of the mulch in a handful of soil or compost. Water the plants regularly.

Notable exponents of mulch gardening methods have been Ruth Stout, author of *How to Have a Green Thumb Without an Aching Back* and Dr W. E. Shewell-Cooper, author of some 80 books on horticultural and organic growing.

Ruth Stout, of Connecticut, USA, mulched her garden for 45 years with rain-spoiled hay, which she peeled off the bale in "books" about 8 inches thick which she used to mulch every garden plant, even daffodils and asparagus.

Dr Shewell-Cooper's 7½ acres of lawns, vegetable gardens, herbs, roses and flowers at Arkley Manor, near Barnet in Herfordshire, is a showplace of "no work" gardening.

The garden beds have not been dug over for 20 years. "At Arkley Manor no chemical fertilisers are used." Dr Shewell-Cooper says, "everything is mulched with compost or sedge peat as a top dressing, and earthworms are encouraged to aerate the soil." He is the founder and chairman of the world-wide *Good Gardeners' Association*.

Esther Deans of Sydney evolved a "no-digging" garden bed of layers of newspapers, lucerne hay, straw and compost which is built on top of the ground (see diagram). *Esther Deans Gardening Book*, published by Harper & Row, is widely available and fully explains the technique. It has been translated into Braille.

See also: *Straw & Paper Garden*, Earth Garden No. 13 (November, 1975) and our article in *The National Times* (December 8-13, 1975) for more details.

Bill Mollison mentions his sheet mulch method (see diagram) only briefly in *Permaculture One*, but covers it more fully in *Permaculture Two*, published by Targari in 1979. This second book, which elaborates on the ideas and systems of perennial tree crops given in the first, is available for $8.00 posted from Tagari Publications, PO Box 96, Stanley, Tasmania, 7331.

Sheet mulch, or sheet composting, as it used to be called, may be applied to farming crops or pasture on a fairly large scale.

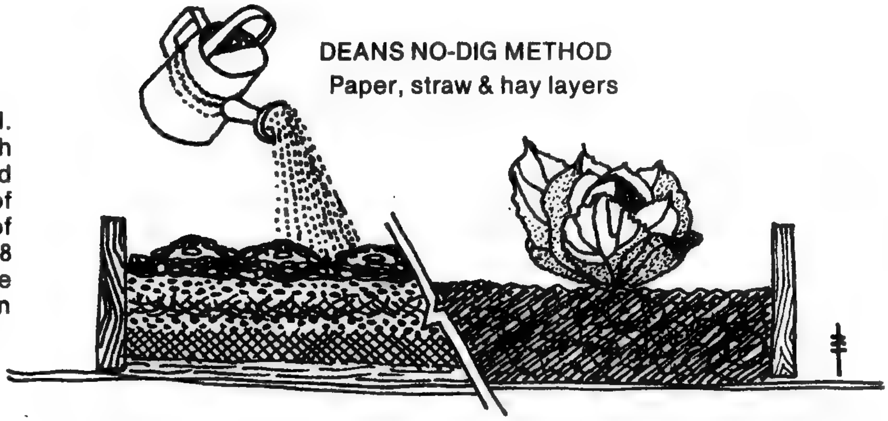
Organic matter should be applied directly to the soil in layers up to several inches thick. In breaking down, the mulch attracts earthworms and adds nutrients to the soil. Keep the mulch away from tree trunks (out from the dripline) and plant stems.

Variations include using a tractor or tiller to work the decaying mulch or compost into the ground, mixing phosphate rocks or potash with the vegetable matter, or growing a legume crop, such as cowpeas, to turn under the soil, a form of green manuring.

Chris Stoltz and Pat Waters have proved that different methods of the sheet mulch method are practical.

In our garden this year we have prepared a "hybrid" bed by digging in cowpeas and covering with carpet underfelt. it seems to be rotting happily in the heavy autumn rains.

DEANS NO-DIG METHOD
Paper, straw & hay layers



Built on lawn, rock or tough soil. Start at bottom of garden plot with newspapers spread out and overlapping, then add pads of lucerne hay, then a sprinkling of manure. On top of that goes 6-8 inches of loose straw, then a circle of good compost, 3-4 inches deep in which seeds are planted. Water.

By using organic wastes productively, you make the grade from consumer to producer, and the very nature of your garbage pail alters to harmless materials. If you extend the mulch out the front gate onto the nature strip, so much the better. Chris Stoltz did this and soon became a lesson in productivity and an inspiration to his neighbours.
BILL MOLLISON, *Permaculture Two,* 1979

Vegies on the verge

BY CHRIS STOLTZ

It all started in 1978 when I was convenor of a group which organised a community day aimed at demonstrating alternative/low technology/organic lifestyles. *Future Fair,* as it was called, was so successful that we found ourselves in the embarrassing position of showing a profit.

We were able to pay for Bill Mollison to attend and talk about permaculture without having to pass around the hat to cover his air fare. The interest Bill aroused on the day proved his presence was justified.

On the following day I took Bill on a brief tour of Bendigo. We went to the College of Advanced Education, where I had trouble dragging him away to keep an appointment I had earlier arranged for him at BCV8. It was while travelling in the car to the television studio that his enthusiasm and "have a go" attitude rubbed off onto me.

After the interview we stopped at my place and my wife Liz and I talked some more about Bill Mollison's sheet mulching technique. He was convincing.

Before the next weekend had come, Liz and I decided we would do it. We would mulch the nature strip in front of our house and plant it out extensively with vegetables. Mind you, Liz was more of the view: What will the neighbours think?, but I was adamant: the unsightly nature strip, then battling to produce even weeds (and definitely incapable of growing lawn!) must give way to vegetables and herbs.

We borrowed a large tandem trailer and loaded it up, the front half with pig manure and the rear half with fowl manure. Friends of ours who run both pigs and chooks were only too happy for us to help clean out their pens. It was no effort at all loading and unloading, but it did smell a little.

After quickly spreading the manure across the nature strip, I watered it, spread newspapers and cardboard over it in several thicknesses and, finally, liberally spread straw over the paper. We watered the whole garden again to reduce the chances of it all blowing away.

We let it "rest" for a few days before we planted out a variety of vegetables and herbs. In planting seedlings, including tomatoes, red and green peppers and cucumbers, we parted a gap in the straw and poked a hole through the (now thoroughly wet) paper or cardboard.

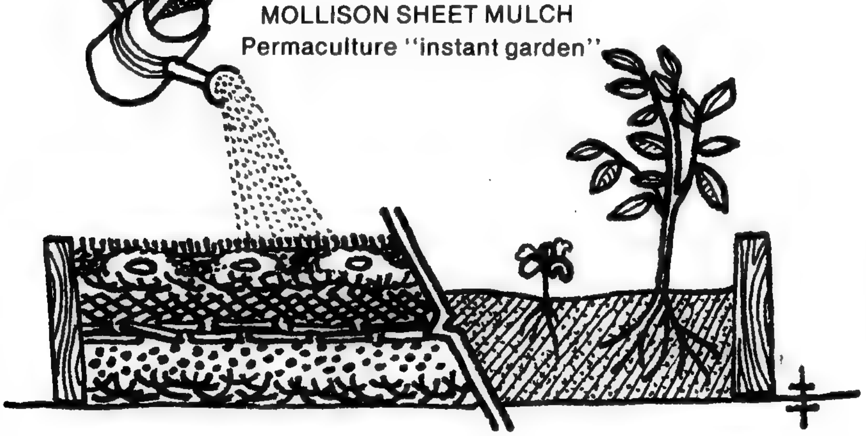
On reaching the manure layer we either poked a hole through it or removed a little to avoid the manure being in direct contact with the seedling (which would kill it). If there was any soil below the manure, we dug a little hole and planted the seedling into it; if not, we planted the seedling in a handful of soil on (literally) the stony/rocky/clayey/soil-less ground.

The procedure for seeds was similar, but always with a handful of soil. Again we watered it. And that's it! No digging, no weeding, and lots of fun.

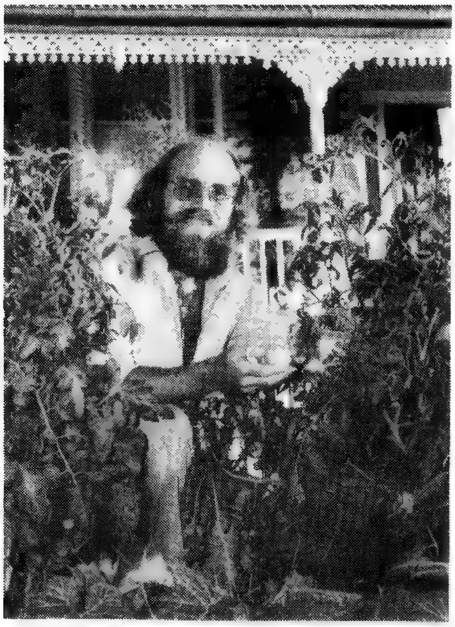
We learnt lots that first year and we have built on our experiences since. Our number one problem is dogs. We often go out our front gate to find dog excreta neatly parked right in the middle of the rhubarb, comfrey or lettuce. At other times we find straw spread everywhere and seedlings and plants uprooted by the dogs trying to get at the sweet-smelling manure. Other problems pale into insignificance compared to dogs.

People from near and far have been interested to find out more about the idea. We've had phone calls from Melbourne, Maryborough and even Perth (after a story in *The Age)* from people wanting to have a go at it themselves. Common questions related to Council's attitude and the inevitable "What do the neighbours think?"

The answer to the first is easy — they don't have one*.



Slashed weeds and grass are laid flat on the ground. Sprinkle with a handful of dolomite and either fowl manure or blood and bone. Cover with a layer of grass clippings, kitchen wastes and leaves. Carpet this with overlapped material such as old lino, carpet, underfelt, newspapers, coats and clothes. Top with a "cosmetic" mulch like sawdust, woodchips, or bark. Fill immediately with herbs and vegetables, cutting holes for larger seeds or tubers. Water until soaked.



Close neighbours have taken a keen interest. One evening we found chicken wire had been placed around some young seedlings. Dear old Reg (aged about 80) from next door thought it would help to keep the birds from damaging them.

Les from across the road carried a few buckets of water from his wife's washing machine to water the plot. He argued that the soapy water would help keep the "bugs" off things and I guess it worked as we haven't had a bug problem. Another neighbour, Trevor, once gave us some beetroot seedlings to plant out as he had bought too many. And advice and discussion is never-ending.

Theft of produce is rare. Once we were amazed to find one of our beautiful rhubarb plants had been raided. All the stems had been neatly cut off, the leaves cut from their stem and left there (probably to be composted!). Another time all the ripe strawberries disappeared — I suspect the neighbourhood children. However, we didn't really mind because it is, after all, community land.

We have recently experienced two major setbacks. The Council Parks and Gardens Department needed to remove a dead tree around which *was* our garden and we commenced building a new home, therefore having less time to spend in the garden.

But don't get the idea that a lot of time is needed to maintain a garden of this nature. In fact you don't even have to water it as often as a conventional garden. We went away for eight days over Christmas and New Year, during which it was not watered, yet no detectable setback was evident.

Satisfaction plus has been our experiences with this nature strip garden plot. It frees up more usable space for the kids in our backyard, has turned a previously ugly and maintenance dependent area into an attractive and almost maintenance free productive area and has been the catalyst for much communication between other people. Also, beautiful soil results in only a short time — we have used the soil for potting.

"Have a go."

Chris & Liz Stoltz, Bendigo, Victoria.

*Chris can afford to make this tongue-in-cheek comment as he is a Councillor of the City of Bendigo.

Carpeting the garden

By PAT WATERS

After three years, we feel we are getting there.

With limited gardening knowledge we began turning over ¼ acre of earth in a stony, blackberry-ridden area of creek flats.

We used a borrowed rotary hoe first up, throwing away as many stones and pulling out as many blackberry roots as we could.

We were impatient and naive. Knowing what we know now, we should have turned the earth many times over a period of weeks before continuing and saved ourselves much pain later on. The pain was real — blackberry prickles leave their tips buried deep inside your fingers. *Ouch!*

But away we went, building up the beds and hopping into the planting. In hindsight we are knowledgeable about a few other organic gardening methods and feel qualified, *now,* to recommend a few things.

Blackberries, couch grass and a few other nasties are not easily discouraged. Cultivation does work, but you don't cultivate your garden paths and surrounds, do you? So all those blackberries and other weeds that you think you have got rid of keep sending up new shoots which feed the roots, which send up new shoots in the garden beds.

Weed, weed, pull, pull, dig, dig. Not only were we spending bulk time weeding our vegie beds, but almost as much time was taken up with tending the paths, with no return.

Then along came Bill Mollison, David Holmgren and *Permaculture 1.* They tossed off the fact that a good way to mulch, build up a garden or control weeds was by using newspapers, carpet, hessian bags, etc.

We liked the idea of carpet for our paths, so off to the tip we went. As is so often the case when you decide to recycle something for the first time, we were amazed at how much of this commodity people throw out.

Not only have we carpeted all the paths and borders of our ¼ acre garden, some twice, but we are now sporting one or two very nice rugs, carefully washed, in living areas.

Every time we went to throw out our rubbish, or passed a tip with a relatively empty ute, we'd check for matting. We collected *everything:* underfelt, hessian bags, even synthetic stuff, which is fantastic. The blackberries and the couch go round and round in circles looking for light, can't find it and curl up and die.

With no paths to worry about anymore, we soon controlled the garden beds and this year we've hardly done any weeding. We are asked about earwigs and snails being harboured, but I don't think we have any more of these than before. In any case, we feel the advantages far outweigh their presence. Some people are amused by the carpets, but most are impressed by the *weed-free* garden.

Layers of carpet are used to beat the weeds at Possum Gully.

Mulching

We made mistakes again.

The more mulch, the better, we heard. So off we trundled more times than I'd care to count to racing stables 30 km away to collect loads of straw and manure from the horses stables. They were happy for us to take away as much as we liked.

We trucked it all back to our place and laid 6 to 9 inches on top of all the beds, then delved down and buried our seeds just below the soil.

Well the poor little seedlings struggled and struggled, finally emerging on weedy white stems, gasping for air and light. Some survived, some didn't.

A casual conversation with some veteran gardening friends revealed that, yes, you can use plenty of mulch, but only *after* the seedlings have emerged and gained some strength. *Dumb!* It's so logical when you know how, or think about it.

We also tried to plant too soon after digging in compost and mulch. The soil was concentrating on breaking that down and wasn't able to give enough to the vegetables.

Rational planting

And we overlapped certain crops.

There are six people here and at one stage we had 10 rhubarb plants. One would have done — we should have planted two and then removed the less healthy one. But we wanted to be sure that we had enough rhubarb, so we put in plenty and they all thrived and looked so beautiful we didn't have the heart to pull them out.

Needing the bed this year, we steeled ourselves and pulled out all but three (still too many).

Zucchinis: Unless you are a zucchini bread freak, or a zucchini pickle freak, I don't think anybody can cope with more than two plants. We have three and I now find myself heaving zucchinis up for the chooks that are nearly big enough to be towed behind the tractor.

On the other hand, we never have enough peas, asparagus or corn. Also we are still learning to *stagger* our planting, so that new crops are coming in as others are finishing. There's a lot in this gardening game, isn't there?

Fertilising

Our beds are producing for most of the year. After piddling around with shallow digging-in of manure and observing crop rotation and companion planting, we took the bit between our teeth and trenched most of the beds.

We dug the earth out to a depth of 9 inches, pitchforked the subsoil, then half filled the trenches with broken down manure we brought in from a local dairy. Then the soil went back onto the top, well broken up and ready for planting.

We've had the best silver beet ever, eggplants (aubergines) and capsicums that are embarassing and bush tomato plants that couldn't bear the weight of the fruit. That backfired a bit because we've lost a lot that rested on the ground.

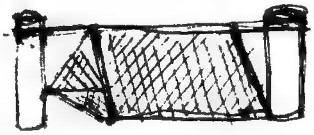
We don't anticipate doing this more than every two or three years. Some beds were left for crops like carrots that don't like heavy feeding.

We also have a 44 gallon drum containing a hessian bag full of chook manure straining into water. We apply this occasionally after a heavy rain or a good watering and mainly on the seedlings to give them a spurt.

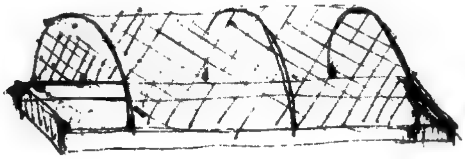
The bird problem

We have used netting covers in the shape of *cloches* to protect our strawberries and tomatoes from birds. We are in an area of heavy bush and have a dreadful bird problem — we've even had bower birds doing *'Woody Woodpecker'* jobs on our carrots, leaving nought but a hollowed-out cone.

When we were suffering heavy losses with the tomatoes we strung wire from one post to another and made a triangle of chicken wire, closing off the ends as well.



It has to be done in manageable lengths because you have to lift up the wire when you want to pick. It's a nuisance, but it works. With the strawberries we made light pine frames and spread chicken wire over wire arches.



Once we trapped a snake which couldn't go either forward or back through the wire. He was hurt so we had to kill him.

We've thought about making nylon netting coverings for our brassicas to protect them from cabbage moth as well as the birds, but we haven't done it so far. Can anyone tell me how it is that when you are 10 km from the nearest civilisation that bloody white moth still finds you?

Organic sources

Organic Growing Books

We have reviewed many works on organic growing over the years, many published by Rodale Press in Emmaus, Pennsylvania, most of which are very good and recommended reading.

These include *Encyclopedia of Organic Gardening* and *How to Grow Vegetables and Fruits by the Organic Method,* comprehensive guides of 1145 and 926 pages respectively, which were compiled from *Organic Gardening* magazine and include the direct experience of generations of gardeners.

Very useful advice is contained in a similar volume (1007) pages, *The Complete Book of Composting,* from Rodale, in which every aspect of composting is touched on, but I understand this is out of print.

Rodale's *Handbook of Composting,* a paperback, is a good *basic* text on the subject.

The Basic Book of Organic Gardening, edited by Robert Rodale, but in a Ballantine paperback, is good value. Michael Roads' *A Guide to Organic Gardening in Australia,* does the same job for Southern Hemisphere, temperate climate growing.

Still with Rodale, *Organic Fertilizers, Which ones and how to use them,* delivers the goods on getting your soil into condition and keeping it that way.

It is hard to pick out any *best* book on organic growing. Peter Bennet's *Australia & New Zealand Organic Gardening* (see review in E.G. 27, page 53), is excellent and has just been reissued with a spread of colour photos.

At the moment though, my favourite book in the field is Lawrence D. Hills' *Organic Gardening,* a Penguin paperback. Given that it is British, it still seems the best all-round for inspiration, sound advice and easily followed growing methods.

For getting the most food from the smallest space, I still prefer *The City People's Book of Raising Food,* by Helga and William Olkowski (Rodale again). I have been re-reading this lately and finding a store of information. For growing and raising small animals like rabbits and fowls it is just as useful as their later *Integral Urban House,* which seems a mite over-sophisticated in comparison.

Besides these, I have always used Catherine Osgood Foster's *The Organic Gardener,* another American work, but packed with first-person information and personality. I first read this in 1973, when the author had been planting and harvesting for 40 years.

For local Australian conditions, the best sources of information are the newsletters and magazines put out by the various organic growing groups. They are written by your fellow gardeners who know the conditions for your area and they are packed with growing hints and information.

Keith

Newsletters

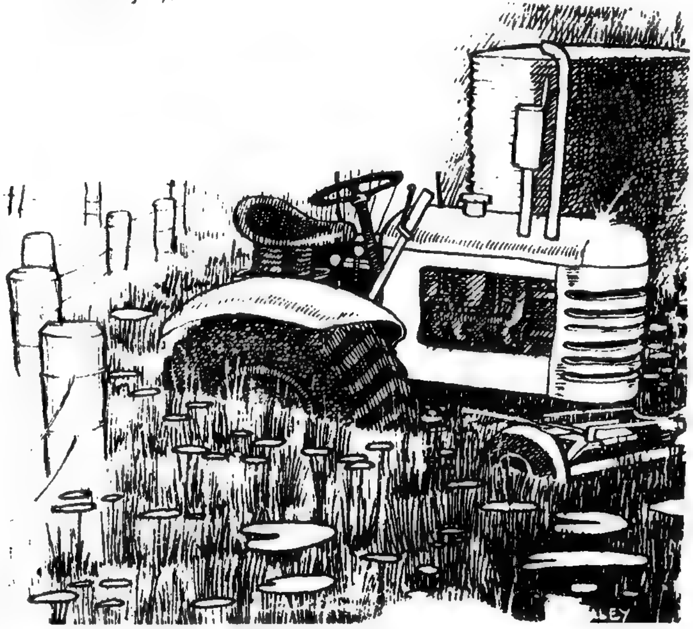
B.O.G.G. Newsletter: From Brisbane Organic Growers' Group, PO Box 135, Toowong (Brisbane), Queensland, 4066, $5.00 yearly (half rates if you join after June each year). B.O.G.G. has recently set up a seed library to combat the Plant Varietal Rights bill.

The Henry Doubleday Research Association of Australia, newsletter editor, Joe Friend, quarterly, from H.D.R.A., Sahara Farm, Robson Road, Kenthurst, NSW, 2154, $6.00 yearly.

Good Earth, editor, Coralie Whitby, quarterly, from Organic Farming and Gardening Society (Aust), Box 2605W, Melbourne, Victoria, 3001. Annual subscription $8.00 for Melbourne metropolitan members, $5.00 country and interstate.

H.O.G.S. Tales, 4 times yearly, from Hunter Organic Growers' Society, Secretary, Judy Miller, c/- PO Kitchener, NSW, 2325. Membership currently $2.00, but expected to rise after July.

Newsletter of the Soil Association of South Australia, Chris List, editor, quarterly, from GPO Box 2497, Adelaide, SA, 5001. Annual subscription $8.00 (due February 1).



Organic Growing

Editors: Anne Heazlewood and Pat Mathew (assistant editor). Four issues, 26 pages, $6.00 yearly from The Organic Gardening & Farming Society, PO Box 228, Ulverstone, Tasmania, 7315.

This is the former *Organic Gardener & Farmer,* in a new, larger format, nicely printed on glossy paper. The latest issue of Organic Growing has stories on growing nuts, a homemade shredder, living with ducks, broad beans, pickling, saving energy, soil reconditioning, mulching, organic garden diary, and a report on the US Department of Agriculture's enquiry into organic farming. It also has the most perceptive review yet of *The Illustrated Earth Garden Herbal* (thanks to Pat Mathew).

A lot of information is packed between the back cover, with a list of organic groups, and the front, which shows in full colour a little girl with a duck.

Bulk orders of 5 or more copies are available at a 25 per cent discount (post free) for shops, co-ops and other outlets.

Weed-free paths

Gillian Axelsen outlined her problems with paths in tropical Queensland in her letter in *Earth Garden 28.*

We have a Wet and Dry season here on 'our selection', with a particularly high rainfall and in summer the kikuyu grass goes rampant. We have a few small patches of couch and some larger areas of paspalum and carpet grass. The kikuyu, like couch, grows up, through and over anything. It even climbs fences! Maybe some of our solutions, or, realistically speaking, *compromises,* may help Gillian and others.

Paths around the house

Don't waste time and energy on them. My carefully laid crazy paving from the back verandah to the workshop (to keep our feet dry in the Wet) got swallowed up that first summer 4½ years ago. If your grass grows thick and rabidly all the time, simply mow it down and walk on it.

With constant trekking round and round our house on pretty definite tracks there has never been any sign of a worn track, so no mud or dirt. Of course, we bring in the grass every time it is mown, but that is infinitely preferable to the labour and frustration of trying to maintain paths around here.

The other compromise you have to make is to buy, maintain and use a noisy, smelly, technological monster called a mower. Ours, called *Jasper,* we bought second-hand and is a sit-on 10 horsepower model. We hate it because it breaks down, it roars and it smells, but we love it because it quickly mows down the rampant kikuyu around the house area and clears up the long grasses, bracken and crofton weed on our cleared hillside, gullies and orchard areas and provides us with mulching material.

The more natural way of keeping down grasses brings its own problems and compromises, for example training your sheep, goats, donkeys, horses or cows to eat just what *you* want them to eat. Your choice!

If you plant lemon grass in an 18 inch (sorry 450 mm) zig-zag line it will successfully keep out kikuyu from your vegie garden, so it will probably also deter couch. If you really want a well defined path, you could grow lemon grass on either side. Lemon grass can be constantly cut and used for an excellent mulch, quite apart from all that lovely lemon grass tea you'll never by able to drink by yourself. By the way, have you tried mixing an equal quantity of apple mint with fresh lemon grass as a change from ordinary lemon grass tea?

Paths in vegie gardens

I've at last discovered a low maintenance method of keeping weed free paths in the vegetable garden which would apply to all climates. My vegie plots are slightly terraced and built up. I first waited for a good rain to soften the soil so I could pull out existing weeds and grass by the roots, but some of it was chipped with a hoe. If you live in a temperate climate you may not even need to do this preliminary weeding as the weeds and grass should die off under this treatment.

NOTES FROM MT NARDI
By Pauline Williams

Lay newspapers — or cement bags, or carpet, or thick cardboard — to a thickness of at least 1 cm and make sure every piece overlaps its neighbour. Now cover this with a good layer of rough mulching material. I throw any grass roots on this path to dry out as they can't be used immediately in a compost heap because they'll only grow again, unless you use a 'hot' method of making compost.

Anyway the mulch serves to keep the newspapers and so on from blowing away and compacts down to a good walking path, adds thickness to the path so no weeds appear and serves as a temporary drying out area for weeds and grasses from the vegie beds.

This means work to begin with in laying the foundations of your paths, but it's worth it. I've found that, even in this climate, if you keep the paths covered in mulch so that your newspaper foundation doesn't tear, you won't need to renew it for around 18 months. And there is a bonus — earthworms will breed under the path and invade your garden.

We felt for Abbie Heathcote with her article, *It isn't easy* (E.G. 28). After 11 years of average year problems, to have so much trouble all in one year! But it can happen because Nature keeps an over-all balance by the compensation principle. A drought in someone else's 'backyard' can mean more fruit eating birds and flying foxes in your area. A drought in your bushland can mean that goannas and other reptiles and marsupials are hungrier, and will take liberties and risks they wouldn't normally take.

We were amused by Abbie writing — "What you have to do is start off small and do everything properly. But of course nobody does." How right she is! Maybe an experienced former farmer, with money, can do it properly. We certainly didn't. Everything we did at first was temporary, a stop-gap or a Heath Robinson job. Now it's all collapsing at once!

Work Barter goes WWOOF

Because of a series of private happenings, we have experienced a change of direction and have to abandon our holiday/work barter scheme outlined in *Earth Garden 28* (page 53). Apologies to EG readers.

In the process of the many warm, eager and sincere letters we received, I have become involved with Lionel Pollard's Working Weekends on Organic Farms (WWOOF) scheme, see EG 29 (page 22), as a regional organiser for this north east corner of NSW.

I am building up a file of host farms and will be happy to hear from potential host properties.

I hope I'll still meet up with many of those who wrote, if you're in this area. The contact address here is:
Regional Organiser, WWOOF, C/-
Neighbourhood Centre Office,
Cullen Street, Nimbin, NSW, 2480.
Phone: 891 1436.

Growing boxes

With Peter Pike's compact container garden you can become an organic grower even if you live in a small inner city block or in a high rise flat.

Peter has perfected an 'instant' mini garden kit which can quickly be assembled into a fibro sided box 1½ metres square and 30cm deep. He can also supply the natural compost and mulch materials which fill the container and provide the nutrients for vegetables, herbs and flowers.

This is an ideal size for an efficient, space saving plot which will fit into small areas such as front lawns, suburban blocks, patios and rooftops. There are compact plants also, such as Pixie hybrid tomatoes, Spacemaster cucumber, bush type pumpkins and Romaine (Cos) lettuces which Peter can supply from his nursery.

We met Peter and his wife, Remedios, a former schoolteacher from the Phillipines, at their nursery and market garden at West Pennant Hills, a Sydney suburb. The herbs, ornamental plants and vegetables they send to market are grown there in the same containers and also in larger raised beds edged with timber and bricks.

In his earlier life, Peter was a quartermaster sergeant in the British Army, but was spending much of his time outside the Q-store growing vegetables and flowers and keeping fowls 'on the side'. "Stop this business or get out," said the Colonel. "I got out and it was the best thing I ever did," Peter says now.

You can assemble the container garden on an existing lawn (Peter Pike's is on kikuyu!), waste land, rubble or concrete. It is filled with organic matter: first a layer of old newspapers overlapped like roof tiles (wet with a garden hose), then pads of lucerne hay, followed by a bag of cow or poultry manure and a sprinkling of dolomite or gypsum. Spent mushroom compost goes on this and the whole is topped with Peter's secret weapon — an organic soil mix he calls Mitee mulch.

If you have some garden compost you may substitute this or add sawdust, grass clippings, hay or other kinds of fertiliser or manure. For a roof or balcony garden the whole process may be simplified by using bags of Peter's basic mulch topped with Mitee mulch. You can take the container box and the bags up in the lift!

The container garden kits cost $35 each. They include the fibro sides, aluminium angles, screws and nuts. Peter estimates that 15 'blue bags' of basic mulch and 8-10 bags of Mitee mulch would be needed to fill the container. Mitee is $3 a bag and basic mulch $2 a bag. So for an outlay of around $85 you could be watching the plants growing on your balcony in a few weeks.

Peter and Remedios are at the nursery most days of the week, and visitors are welcome, but phone first — the number is (02) 871 3608. They also have a range of plant seedlings, potted herbs and vegetables in season. *Container Gardens* are at 5 Mahers Road West, West Pennant Hills, Sydney.

Remedios and Peter with a prize pumpkin.

BY PETER PIKE

Since my first allotment in wartime Britain, which I toiled over from the age of ten, I have never allowed the pleasures and tranquilities of growing things to escape for long.

Throughout my years (all too many of them) when circumstances determined I should be a soldier, I carried my green thumb with far more confidence than my trigger finger. Wherever and whenever a camp was established for more than a month, I would sniff out arable soil, seeds and seedlings and begin planting.

Gardens blossomed around my door in places as far flung as Crete and Malaya, as inhospitable as the deserts of Egypt and as fertile as the countryside of Japan and Korea.

I think back to my first view of the endless, scorching sands of Faid, some 200 miles from the Suez Canal, where I was to spend several years of my life against my will. "Dear God," I thought, "how can I exist without a garden?" I found a way — carting in my leave hours cartloads of the rich organic silt from the Canal bottom to the camp and using camouflage nets for shade. I was soon serving fresh and healthy salads to my friends.

Now, I am happy to say, I have discovered a way to create an ideal garden wherever I choose. A lifetime of studying how and why things grow has not been wasted and the sight of fleshy white turnip, fat red radish and tomato and the clean greens of lettuce, spinach and hearty cabbage can be enjoyed by anyone, no matter how little he or she knows of gardening or how little land they have access to.

The two great requirements for our "return to nature" are good soil, of which there is little, and time, of which it seems for most of us there is even less. Then, of course, there is the need for space.

Although it differs from suburb to suburb, much of Sydney's soil is harsh and sandy and (with the exception of that painstakingly mulched by patient gardeners) is entirely lacking in the necessary organic nutriments essential to healthy growth.

Time? Well, life is certainly not moving any more slowly as we approach the closing chapter of the 20th century and most of us have to keep up with it.

As for space, alas, with the increasing trend towards highrise living and the on-going energy forcing more and more people closer and closer to our cities and places of work, the time is in view when a small plot of earth will become a luxury for many. This does not seem right to me . . . it never has.

On my return from the East I took all I had learned up to Queensland and began to build my private paradise. It took work from dawn to dusk, seven days a week, but it was work that I loved — until floods came, then drought, then floods again. Paradise in ruins.

I moved to Sydney and took part, for a time, in the rat-race for material success. But my garden beckoned always. Land was offered on an island in return for supplying a hotel with vegetables. The island was lush and tropical, off New Caledonia. My garden thrived — until a freak typhoon demolished it overnight.

I nurtured it back to life. An unknown root disease struck, my garden withered before my eyes. The expert in Noumea said it could not be fought. This was not my time or place.

Back in Sydney I took note of the 'forced' growing of vegetables that fills our supermarkets and of the anxious debate on the dangers of insecticides and chemical fertilisers. I became aware, too, through my friends in yoga circles and my own consciousness of health, of the growing need to take care of ourselves by caring for what we and our families eat.

It was time, I decided. No one should be denied the simple rights of self-help through the miracle of gardening. I found a derelict plot of land at West Pennant Hills. It was a jungle of blackberry briar and the largest collection of old motor tyres I have ever seen.

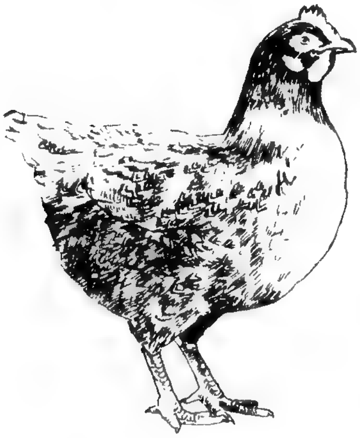
That was two years ago. It is now a joy to behold. Neat rows of container gardens, abundant produce grown in my own special mulch. And what is most important to me, an endless stream of fellow gardeners, some seasoned, some raw beginners, who love to "grow their own" and never tire of talking or learning about the do's and don'ts of organic growing — perhaps the most worthwhile and rewarding pursuit life can offer.

Compact growing boxes with flourishing plants at Container Gardens.

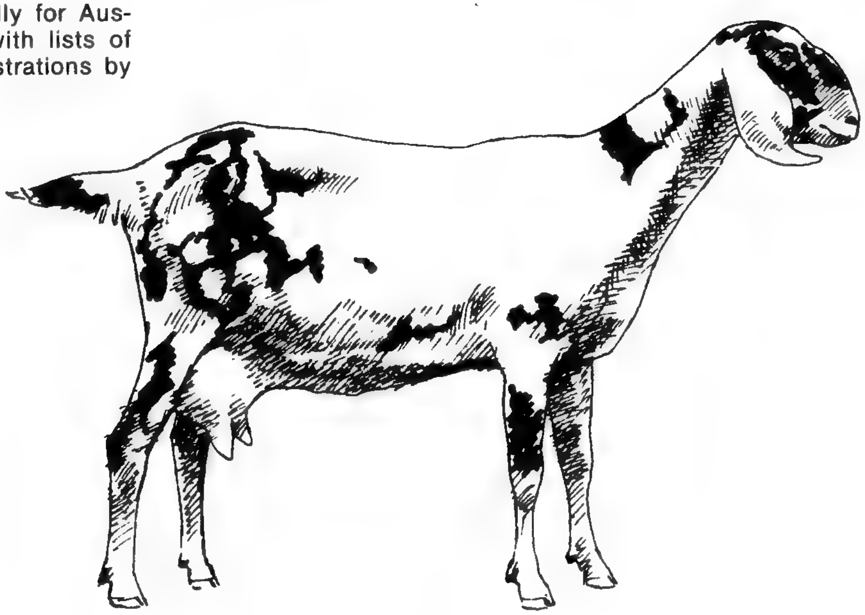
Fowls, Goats, Bees

LIVESTOCK

These three hardcover books on keeping livestock, published by Nelson, are written especially for Australian conditions. Each has a glossary with lists of societies and suppliers and excellent illustrations by Tony Irving.



Barnevelder — female.



Anglo Nubian doe.

A Guide to Keeping Poultry in Australia

Dorothy Reading, Nelson, 1981, 141 pages, illustrated, hardback, $14.95.

Keeping a few hens in the suburban backyard or on the farm will supply your family with fresh eggs at little cost and a few hours of care each week.

Dorothy Reading's guide covers just about all the essential knowledge you need to start and all the problems and rewards involved. The text has been written in association with advisers from the Department of Agriculture in Victoria and applies equally to all States of Australia.

It covers points of the domestic fowls, how eggs are made, the breeds, including Leghorns, Rhode Island Red, Light Sussex, Australorp (a cross between the Langshan and the Black Orpington) and the Barnevelder (which lays dark, chocolate coloured eggs) and bantams, including Silkies.

There is useful guidance on buying stock, feeding, deep litter, runs and housing, nests, treatment for parasites, then storing and freezing eggs and killing and dressing birds for meat, not forgetting *how to hypnotise your hen!* Raising ducks, geese, turkeys, Guinea fowl, pheasants and quail is also briefly covered.

> In a well-kept deep litter house, the birds can be kept inside the shed all the time. If they have access to a yard for part of the day, the litter will last longer, although it should last twelve months anyway. When the litter becomes soiled and smelly it makes a wonderful material for fertilising your garden. The litter material will have been reduced to a fine texture by the scratching of the hens, and it will contain a high proportion of fowl manure.

A Guide to Keeping Goats in Australia

Maria Prendergast, Nelson, 1981, 143 pages, illustrated, hardback, $14.95.

This is probably a good work to read before getting your goats, because it will help you decide whether or not you are compatible with these intelligent, active and wilful animals — in short, if you are a *"goat person"* or not.

If you do go ahead, then you will appreciate the sound coverage of raising healthy goats in Australia for milk, meat or fleece. It deals with choosing goats, either milking does, kids, or bucks or Angoras for mohair, and the breeds, like Saanen, British Alpine, Toggenburg and Anglo Nubian.

Housing, feeding, milking, tethering, birth, raising kids, and day to day care of goats are detailed, but the section on fencing seemed too brief and the warnings dire, but not dire enough on this important subject.

A good follow-up section tells you how to make cream, butter, yoghurt and cheese (Ricotta and Fetta) from goat milk, also killing, goat meat and hides.

A Guide to Keeping Bees in Australia

Norman Redpath, Nelson, 1981, 142 pages, illustrated, hardback, $14.95.

This work about the smallest of small stock by the late Norman Redpath is a thorough handbook on beekeeping. It has been revised and expanded with further information, photos and diagrams (see review in E.G. 25, page 191).

You may have seen the wacky television commercial in which a rustic buffoon fends off a string of alluring maidens while he grinds grain, kneads dough and finally bakes and eats a delicious loaf of bread. The message which comes over is that the Bornhoffen loaf is made of natural grains and tastes good.

The wide availability of this health bread is a success story of Frank and Gabrielle Brown, who baked the first Bornhoffen loaf (after some experiments) in 1970. The name came from the community style of baking bread in old Germany, but the idea of mixing malted wheat grain (it is sprouted), buckwheat, wheat bran, gluten flaxseed, non-fat milk, solids and vegetable oil is uniquely Australian.

Bornhoffen is also a farm, with a productive orchard of 3000 fruit trees, including plum, peach, apple and pear and a vineyard — raised by natural methods of agriculture. It is also a "village", with an expanding community of vegetarians interested in self-sufficiency and healthy living, situated in south-eastern Queensland.

Man does not live by bread alone, but with Bornhoffen he comes close.

The Bornhoffen loaf is now distributed from Perth to Cairns and is fast becoming a popular product with supermarkets as well as with specialised health food stores.

The people at Bornhoffen are enjoying the challenge of presenting their "different" products to the conventional consumers, who in their own interest, show a pleasant and fresh attitude to "another way".

At first, Frank and Gabrielle, who baked their own bread in the country kitchen of the first Bornhoffen farm, shared the method and enjoyment with classes and gatherings large and small, in the towns and cities.

In the cities, more and more people talked, laughed and joined in with the good aroma and happy feelings of quick, nutritious and tasty bread. Survival discussions, demonstrations and workshops were part and parcel of the bread baking and Bornhoffen tried to refine the art of fostering harmony and vitality in mind and body in a polluted, unnatural suburban/city atmosphere.

It followed that this expanding vision called for more "practice" in order to balance the "theory" side of workshops and seminars. It was felt that the survival skills which people must develop were not those of well-watered coastal plains where the majority of folk dwell in city and country.

So — the search and subsequent move to high country of 500 acres of bush and 50 acres worked, rarified air and negative ions, the creation and application of "low rainfall survival skills" in relation to organic orcharding and vineyards, solar drying, herb production, free ranging poultry, vegetables and grain growing and the conservation of natural resources and of living things of that particular environment...

And — the exploration of a fundamental question raised by Mr J. Krishnamurti: "Can members of a community (acting rightly) free themselves as they live and work together, from their background of all forms of conditioning?"

The enquiry by Bornhoffers into this question is not a formal one. Simply, as the folk go about their daily work, this application interests them. Krishnamurti is not Bornhoffen's guru, nor is he anyone's guru. He is neither philosopher nor teacher. His words are a mirror in which to see oneself. Those who are able to look at themselves unflinchingly in the mirror are never quite the same again.

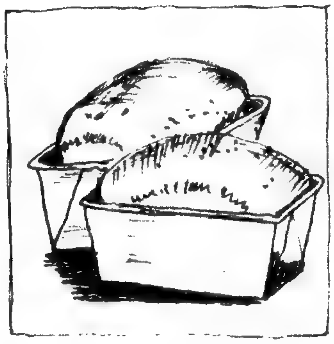
Vegetarian people who practice natural health and who work, eat and rest in an atmosphere such as this, have an abundance of mental and physical energy. So is the case at Bornhoffen and so — again the expanding vision — Bornhoffen is now part of both worlds, combining that which is useful in both to go onto the age of Alvin Toffler's "computerised hoe", enquiring in a practical way into Fukuoka's understanding of nature and into Krishnamurti's freeing the mind of all conditioning.

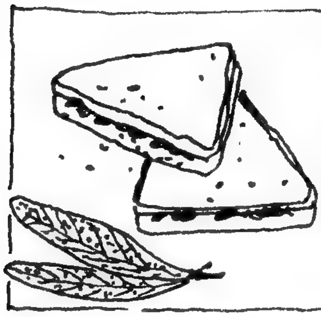
Produce of the Bornhoffen Village is presented to the market place in different forms. In the "today" world of business, where primary produce returns vary according to the actions of persons unseen, Bornhoffen people meet the "what is" with a workable plan.

Collecting fruit from the orchard floor at the end of the season is strenuous, but most necessary to prevent the completion of the life cycle of any orchard pests.

Preparing home-dried herbs for storage. Midsummer and early autumn herb harvests are dried in tied bundles suspended from the rafters. One or two plants of the frost tender herbs are left to seed from late summer.

Harvest at Bornhoffen



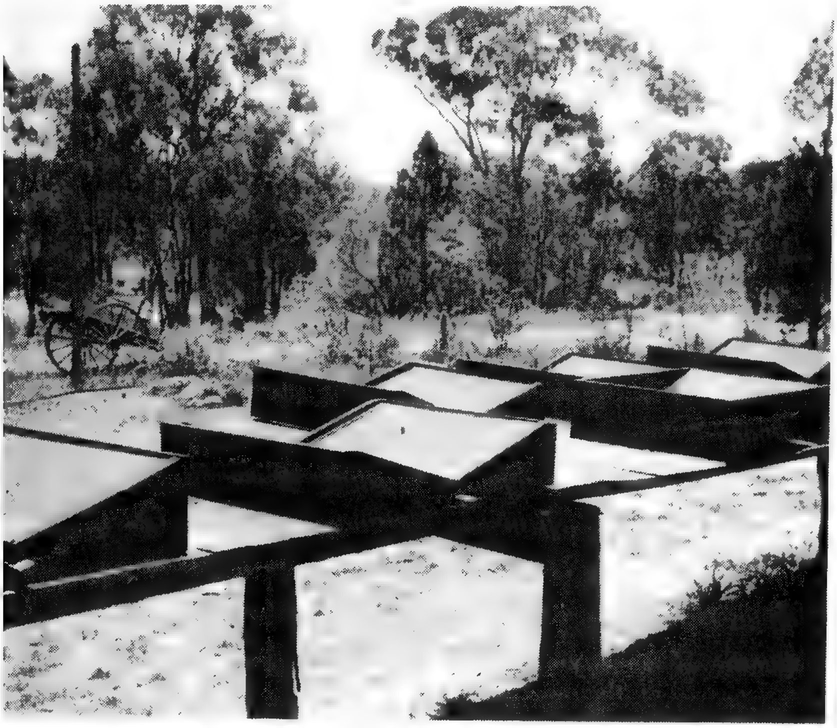


SAGE & CUCUMBER SANDWICHES HAVE BEEN ENJOYABLE FARE AT BORNHOFFEN DURING THE LATE SUMMER — WHOLE SAGE LEAVES ARRANGED ON A LAYER OF THINLY SLICED CUCUMBER, TOPPING A SLICE OF HOME-BAKED BREAD — NOT ONLY TASTY BUT FROM CHINESE LORE, "SAGE STRENGTHENS THE BRAIN & HEART AND QUICKENS THE SENSES"

The Bornhoffen orchards are mowed to layer mulch.

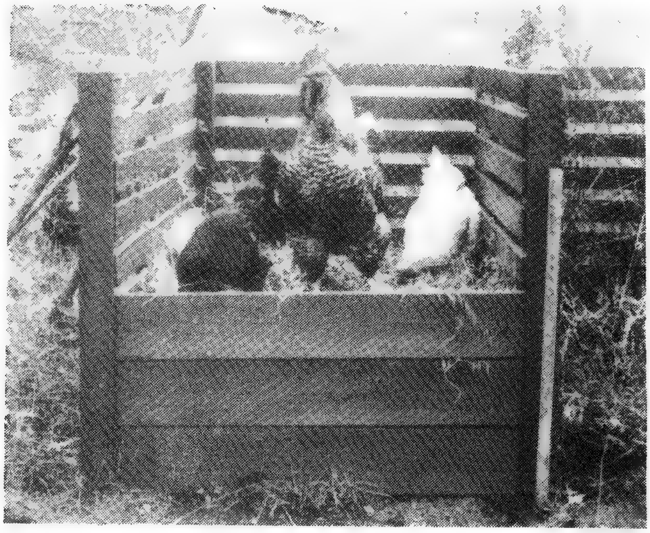
A Bornhoffener prepares a box for grape-packing — grapes for mail order as well as for market are harvested, while many are juiced for use in Bornhoffen sugar-free fruit spreads.

In selected areas, grass and weeds are mowed and gathered to layer in the orchards and gardens for the winter months.



Solar driers — fruit, vegetables and bread crumbs go into the driers as well as the Bornhoffen Fruit Chew mixture and seed and grain wafer concoction. These driers are home-made. Solar drier kits and booklets of practical recipe ideas are available by mail order from Bornhoffen Village.

Picking plums at Bornhoffen. The small orchards are surrounded by acres of natural bush.



Bornhoffen "free ranging" chooks being used in a compost pile.

The compost pile shown here is not brewed to any set formula — twigs, leaves, grass, kitchen scraps, poultry droppings, comfrey, yarrow, tansy, ash, hair, newspaper, soil and raindrops all lend a hand!

This is just one stop for Maurice, our resident rooster, during a busy day which commences at 4 am and finishes at sundown. He shepherds his flock daily about an unbounded area, although the poultry "pad" appears to be much further than 500 yards from "home". Home is a tight enclosure at night, so foxes, dingos and neighbour's dogs are kept at bay.

Maurice is the only cockerel. And he works. He scratches to find food for the girls and calls them to share the goodies, keeps an ever watchful lookout for approaching trouble, has dust baths, celebrates each egg laid by joining in the cackle chorus and would protect with his life if necessary.

His predecessor, Chanticleer, was killed in action. He was called upon to defend his flock at night, but his opponent, a wild cat or a fox, was obviously superior.

At Bornhoffen we keep poultry for egg production — that is "free range eggs". The Bornhoffen people see the eggs from hens living in a natural state are life-giving food and vary much from those produced by the battery variety. Poultry meat is not consumed.

Bornhoffen sugar free, wholefood fruit spreads have been developed and marketed from the farm, while Bornhoffen/Caboolture sugar free acidophilus yoghurt, as well as the bread, quick yeast, flour meals, quick bread book and bread-making cassettes are all in the market place.

Bornhoffen sees there is "another way" — not the conventional, not the alternative, but a way for each, possible when one can see and listen free of conditioning from the known.

Bornhoffen is another way, whether surviving in the city or in the bush and is expanding to the populated centres. A base has been established in Toowoomba, with a home, warehouse and a demonstration/workshop area.

There are firm and positive associations with city and country life; with co-operative and efficient multi-national companies, farmer co-operatives and local cottage industries, while the Bornhoffen people practice a simple, natural and healthy lifestyle returning all possible to the earth which supports them.

Hard-footed animals are not in harmony with the 600 acres at Bornhoffen on the Granite Belt of Queensland. The continuing drought has shown the problems and further depletion of the land experienced by others who keep animals which are alien to the environment.

But Bornhoffen land is faring well in the second year of drought. The orchards have been mowed (not disced) and worms are appearing in the previously lifeless soil.

Dead wood has been removed from fruit trees and vines, any available mulch has been layered and seaweed fertiliser has been applied. Composting, water conservation and solar drying of surplus produce is a way of life.

No living tree is used for fuel. The weeds grow with the crops as they give shade and conserve moisture. Only the strongest plants survive in the weeds. These produce the life-giving food and the seed is saved from the best of this crop. The natural insects and spiders are returning to the vineyards and orchards so birds have not eaten the proportion of fruit that they did in the two previous seasons.

The Bornhoffen experiment is now seven years of age and some light is emerging from the enormous turmoil which results when one's consciousness is given rein to expand naturally.

Bornhoffen Academy of Creative Living at Fletcher is now accepting applications from interested people who either want to make a complete move to the country, or else choose to remain in their city home, keeping the job which gives them security and income, but still sharing in the adventure by becoming a member. Application forms are available from Bornhoffen, PO Box 76, Glen Appin, Queensland, 4381.

Weekend experiences and three-day seminars are held, with information posted on request. Free weekend accommodation is offered at different times of the year in return for work.

Bornhoffen also distributes free literature on organic growing, natural food preparation and eating and literature of J. Krishnamurti talks. Bi-monthly newsletters are mailed to all interested. Opportunities to work within the Bornhoffen framework are available to people with a positive attitude and developed skills.

Pauline's kitchen

By PAULINE OSMOND

Above my long kitchen bench are three large windows which look out onto a native garden. The shrubs there make a delightful screen, filtering out the hot summer sun and I enjoy watching the little native birds flitting through the branches.

Once we even had a carpet snake curled up against the kitchen window for a few days!

The window which catches the winter sun has a crepe myrtle in front of it. This is deciduous, so we get summer shade and winter sunshine.

When we built our house we gave careful consideration as to which aspect the kitchen was to face. We decided on north because we preferred a 'sunny morning' kitchen rather than late afternoon light.

The kitchen bench has round timber supports and is covered in formica. Inside it is a large double bowl stainless steel sink. We decided on a double bowl because we were making cottage cheese and preserving large quantities of vegetables. The two sinks have turned out to be useful when we've been straining milk, rinsing cottage cheese and preparing loads of tomatoes for preserving with the Fowlers Vacola kit.

Over the sink we have running rain water from the tank (left hand tap handle) for drinking and water pumped up from the creek (right hand tap handle) for washing and rinsing dishes.

Food storage bins are under the bench. Mice are a part of life in the country and they will always find a way in unless you make food storage areas vermin proof. Kevin devised and built bins which are 18 inch square boxes made of veneered Pyneboard, with tightly fitting rebated pine lids. There are timber runners on the bottom which allows the bins to be pulled out easily by the handles at the front. In these bins we store our bulk foods such as wholemeal flour, rolled oats and so on.

I also store onions and potatoes in baskets under the bench. The compost and garbage buckets are there too, with tightly fitting lids to discourage mice and fruit fly.

Along the opposite wall I have a pantry cupboard 8 ft long and 8 ft high with 14 inch deep shelves. This is also a tightly sealed unit with firmly fitting doors. Even though we've had mice inside the house we have never had them inside our food and utensil storage areas.

Our house is of round timber construction, bush poles supporting a corrugated iron roof and rough sawn timber slab walls. The round beams and rafters are really handy, to hang baskets from, for herbs and flowers to dry and for pot plants.

We have a Raeburn slow combustion stove, which unfortunately was in bad condition when we got it, so we can't run hot water from it because the tank is burnt out. However, we're on the lookout for a stove in better condition. It still cooks really well and we've used it to make many batches of bread and cakes and other delicious food.

Pauline makes a "sprout" salad.

Even with our large room we've found the slow combustion stove very hot to use during summer. The first few summers we tended not to light it if we could help it, so we ate lots of salads. We also bought bread rather than face the heat involved in lighting the oven. When the children began asking for homemade bread, we decided it was time to put in an electric stove so we could continue to make wholesome bread. The electric stove is a practical alternative for the summer but as the winter months approach, we look forward to having the combustion stove going all day with the kettle always on the boil.

For the first year in our house we didn't have electricity. Now that we do, we have a refrigerator and a deep freeze in the kitchen, next to the pantry. The deep freeze is a 10.6 cubic feet model and really too big for us, even though we are a family of six. We eat very little meat, so the freezer is mainly used for vegetables and homemade cooking.

The kitchen floor is 6 inch x 1 inch bluegum, which we have sanded and painted with clear Estapol. Because of the sawn finish of the boards, the floor is not highly glossy, but sealed to a finish which is easy to wipe over and doesn't show the dirt or scratches.

The combustion stove sits on a concrete hearth on which we stack wood fuel in baskets.

Our table and chairs sit in the middle of the kitchen. This is where we knead the bread dough, sit and talk and entertain our friends, where the children paint, cut out and make a mess — and where I am writing this.

Now the children are growing older we do need another living area away from the kitchen, so we're starting work on a mudbrick extension soon. But while the children have all been little, the combined kitchen and family room has been ideal.

My kitchen is hardly the Margaret Fulton dream kitchen. But it is practical for me, it is the heart of our home and I love it.

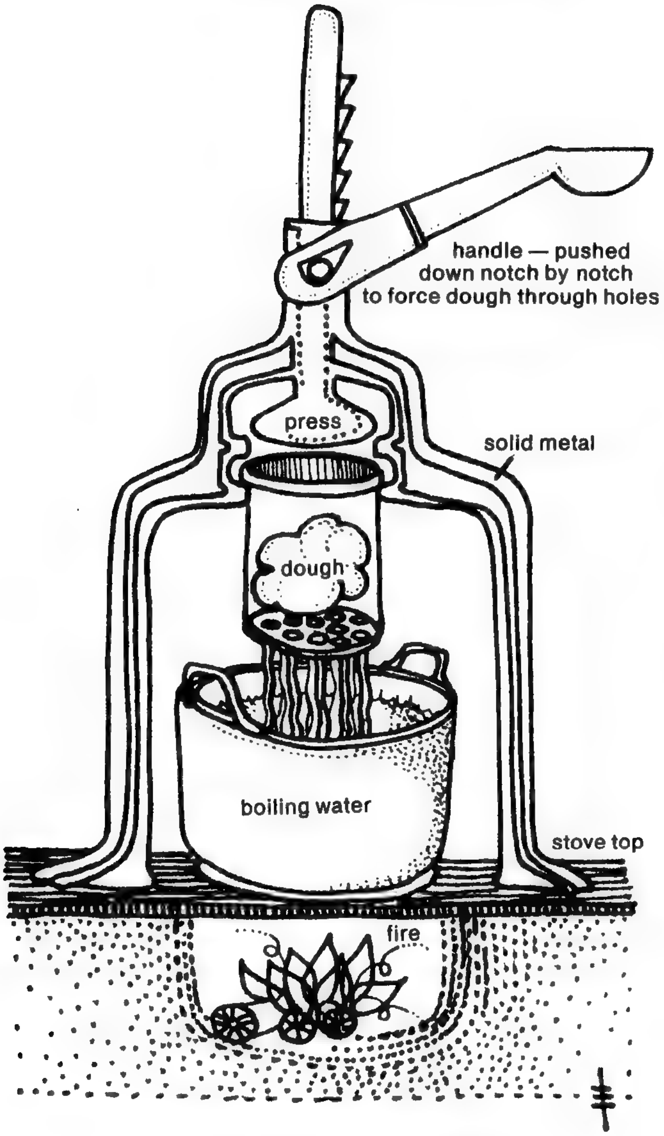
PUMPKIN BREAD

4 beaten eggs
2 cups cooked mashed pumpkin
2/3 cup water
1 cup oil
2 cups honey
2 tsp baking soda
1½ tsp salt
1 tsp cinnamon
1 tsp nutmeg
3½ cups wholemeal flour

Beat all the ingredients well. Pour the mixture into two large loaf pans. Bake one hour 10 minutes at 350°F.

Wholemeal pasta

By Yvonne Braun


handle — pushed down notch by notch to force dough through holes
press
solid metal
dough
boiling water
stove top
fire

OLD GERMAN SPETZLE MACHINE

The old Spetzle machine I have came from my mother-in-law in Germany and is over 80 years old and still going strong. In Australia, of course, we would call Spetzle either pasta or noodles.

This is my recipe for wholewheat pasta (or Spetzel!)

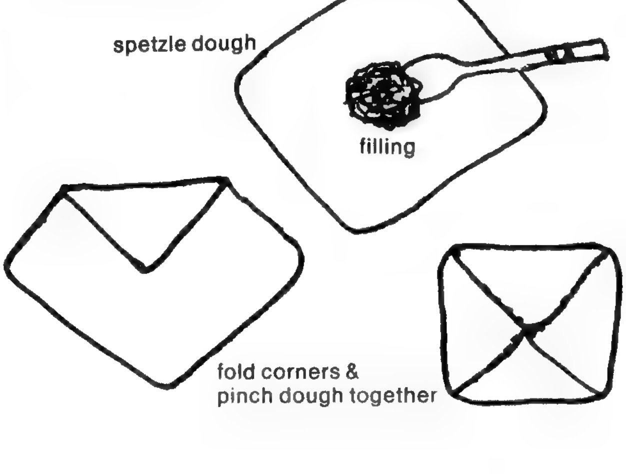
Start with one large cup of wholewheat flour. Add one teaspoon of salt and two large eggs (or three small ones). Beat to a stiff, gluey dough — add a little water if it gets too stiff.

Have a large pot of boiling salted water ready. Then either put dough into the Spetzle machine cylinder (if you have one) and press it through the holes, or turn the dough onto a board. dip a knife into the boiling water and cut the dough into thin strips into the boiling water (the dough will swell).

The Spetzel is cooked when it rises to the top of the boiling water. Drain in a strainer, rinse in cold water, drain again and keep warm in the top of a double boiler which has boiling water in the bottom pot.

It's very filling and may be fried the next day, or added to soups or stews just before serving. Spetzle dough can also be rolled out onto a floured board and cut into squares, like ravioli. Add a filling of meat or vegetables as you like, fold up and cook in boiling water. It rises when cooked. Serve immediately, or keep warm in a colander over boiling water. It's nice with garden fresh salad.

Gut appetit!


spetzle dough
filling
fold corners & pinch dough together

A cool kitchen

Keeping the kitchen cool when you have a slow combustion stove is a problem, especially at the height of summer. This old-fashioned but workable solution is reprinted from *The Coronation Cookery Book,* compiled by the Country Women's Association of NSW. Our copy is the 4th edition (February 1945).

By Mrs R. Stewart, "Plevna", Trundle, NSW.

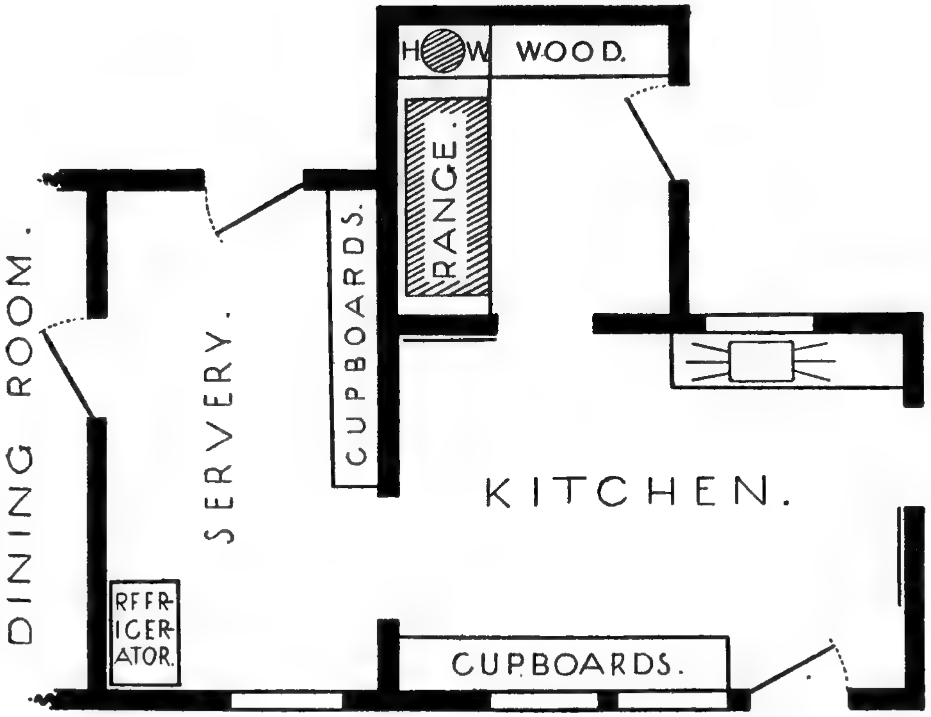
Coolness in the kitchen can be obtained by careful planning of ventilation and the stove position. A stove placed centrally in a square kitchen heats the entire room, but if placed at the end of a long room (preferably lengthwise) with ventilation designed to draw the heated air upwards, cool air can be circulated round the sink and work table at the opposite end of the room.

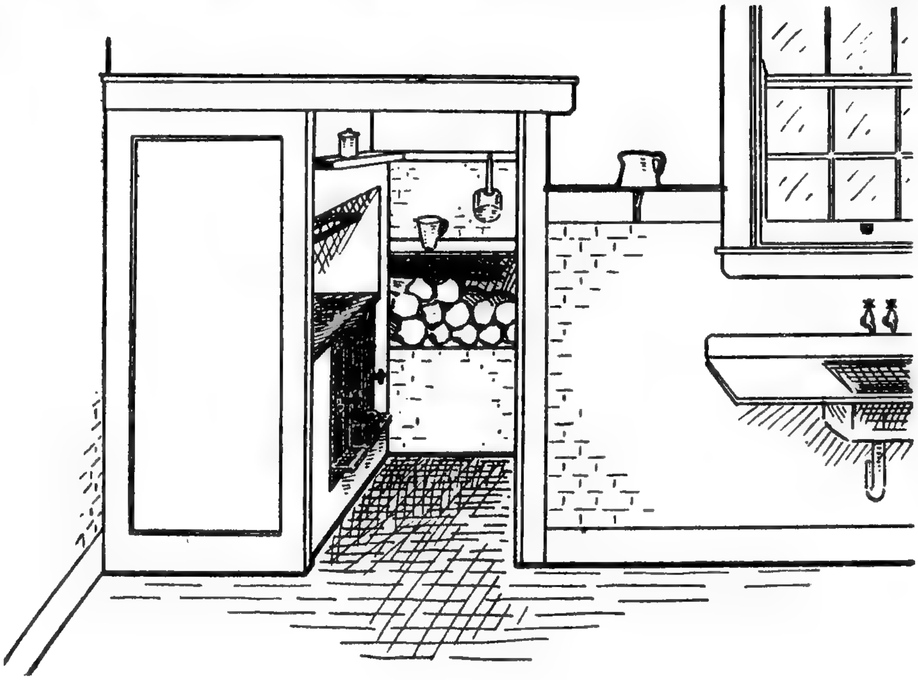
When planning the kitchen of "Plevna", the stove was placed in an alcove outside the main working part of the kitchen, which, having cross ventilation and being sheltered from sun by verandahs and other parts of the building, not shown in the plan, is one of the coolest rooms in the house.

A sliding door can be drawn to shut off completely the cooking alcove, but this is seldom found necessary, as the upward draught obtained by means of a fanlight above the outside door and a ventilated double skylight above the stove, successfully draws the heated air away from the inner doorway.

The hot water storage cylinder is beside the stove, and wood is placed at a convenient height on a solid concrete bench to the right hand of the stove. Above the wood is a wide aluminium covered shelf. A small work table and pot hooks complete the furnishing of the alcove.

In the kitchen proper, cupboards are placed under the large windows with a tiled work table top. Air is drawn across the room to the window above the sink on the opposite side. Other incidental fitments are not shown in the plans.





A macrobiotic bakery

Gary, baby Adam and Christine outside the bakery.

By Gary & Christine Hepworth

The phone rings — it's a customer wanting to know if we use any of the Deadly Nightshades in our pies!

While Gary is assuring her that "No, we don't use any of those," Christine burns herself on the hot oven and drops a tray of spinach pies, all 28 of them! Meanwhile, baby Adam has somehow managed to crawl into the storage cupboard and is busily strewing dried mixed herbs all over the floor, sampling some as he goes.

The shop bell rings. It's a salesman wanting to show us the latest and greatest range of odourless, colourless, flavourless cooking oils.

Well, it's all in a day's work here at the Harvest Bakery. We operate in a kind of controlled chaos, which while disconcerting to our customers and casual workers, seems to get us by. We actually do enjoy it (most of the time!)

We are a small natural foods establishment, supplying over 3000 wholemeal vegetable pies (pumpkin, mushroom, spinach and curried lentil etc) each week to shops here in Sydney.

In 1977 Gary was running Harmony Foods in partnership with a friend. We had been following the Macrobiotic way of life for some time and had experienced the enormous benefits to our physical and mental well-being that come from a change of lifestyle.

We had gained some sort of an understanding of the importance of food in improving the condition of individual people and, consequently, the condition of society as a whole. Many people nowadays feel that Mankind is reaching a crisis point. Our beautiful Earth is being destroyed by greed and thoughtlessness; heart disease, cancer and mental illness have reached plague proportions; family relationships are being destroyed; divorce, violence, crime and road accidents are increasing daily. And the threat of nuclear war is constant.

But if we accept that *"We are what we eat"*, then we realise that the ability to change this situation lies within a very simple way — our choice of our daily food.

The food we eat becomes our blood. This nourishes our body organs, which in turn influences our thoughts, emotions and daily behaviour. While people persist in following the modern diet of refined, chemicalised, industrial food it's inevitable that their conditions will continue to weaken and that life on this planet will rapidly deteriorate.

Only a return to natural and organic methods of agriculture and food processing and the daily consumption of home-cooked wholefoods will halt this downward course. Individual well-being and happiness leads to social well-being and happiness.

With these thoughts in mind we set out to encourage people to return to a diet of natural foods. One practical way of achieving this, we decided, would be to supply people who would otherwise be unable to provide this for themselves, such as office workers, pensioners, busy parents and school children, with a nutritious take-away food in a familiar form — *The Great Australian Pie!*

We simply replaced the meat with vegetables, the refined white flour with stoneground whole wheat, the hydrogenated shortening with vegetable oil and the "filler" or "binder" with brown rice and beans.

So *Harvest* began. Our little flat became a factory.

From the kitchen, measuring about 6ft x 8ft, we managed to produce (illegally, of course), several dozen pies each week for our friends at Harmony. Before long, other shops were requesting them, so our little oven was no longer sufficient. Fortunately, Gary's friends and family came to the rescue with the offer of the use of the bakery behind a cake shop at night and the run of his brother's house. With their help we managed to deliver twice weekly to eight local health food shops.

We'd drag ourselves out of bed, start chopping vegies and simmering sauces, attracting much curiosity from the neighbours who wondered why the overpowering aroma of onions and garlic kept emanating from the back door! We'd pour the filling into large plastic buckets, load up our little V.W. and drive across the Harbour Bridge to the bakery, unload all our ingredients and equipment, bake the pies, try to squeeze ourselves in among the delivery trays, then head back again to deliver the goods.

This routine became rather wearying after a while and we began to look for proper commercial premises. After several months of frustrated searching, we found our present home at Northbridge. It had all the right ingredients — cheap rent, quiet location and a Health Inspector who used his common sense rather than his rule book.

The place was completely empty, so we set to work cleaning, painting and renovating. Gary and a couple of mates laid the plumbing (rather crooked, but it worked, nonetheless) and tiled and cemented the floor. Equipment was difficult to come by. We haunted auctions and second-hand dealers, but funds were running dangerously low.

Then came our lucky break. We happened upon an old cake shop loaded with baking equipment which an inexperienced estate agent offered to sell to us in exchange for our cleaning up the premises. "How much?" asked Gary. "Ohhh, say $800," said the agent. So we acquired *thousands* of dollars worth of equipment. There were three large gas ovens, a three door commercial refrigerator, dough mixers, a shop counter with refrigerated display, stoves, flour bins, baking trays — the works! The Gods were definitely smiling on us that day.

Of course, getting it all into the bakery wasn't easy, but with the help of an enormous crane to lift the ovens through the front window we managed it and kept the entire shopping centre amused at the same time.

We scrubbed and painted our new acquisitions 'til they looked as good as new. We added a pastry table made for us by Gary's uncle and, of course, a delivery van, a Kombi in a lovely shade of bottle green (courtesy of ex-army auctions) and we were ready to begin.

Well, that was two years ago and since then we have learned a hell of a lot about how *not* to run a business!

We began by producing a dazzling array of breads, cakes, pizza, quiche, fruit tarts, biscuits and slices, until we realised that that sort of variety on a large scale is ridiculously time-consuming and uneconomical.

We chopped 20 kilogrammes of onions by hand each day (and you can imagine the tears that caused) until we discovered the *Magical Vegetable Cutting Machine* (ah, the wonders of modern technology!).

We worked 18 hours a day, six days a week until we found that *that* leads to a nervous breakdown and continual nightmares of pies with legs dancing on the bed.

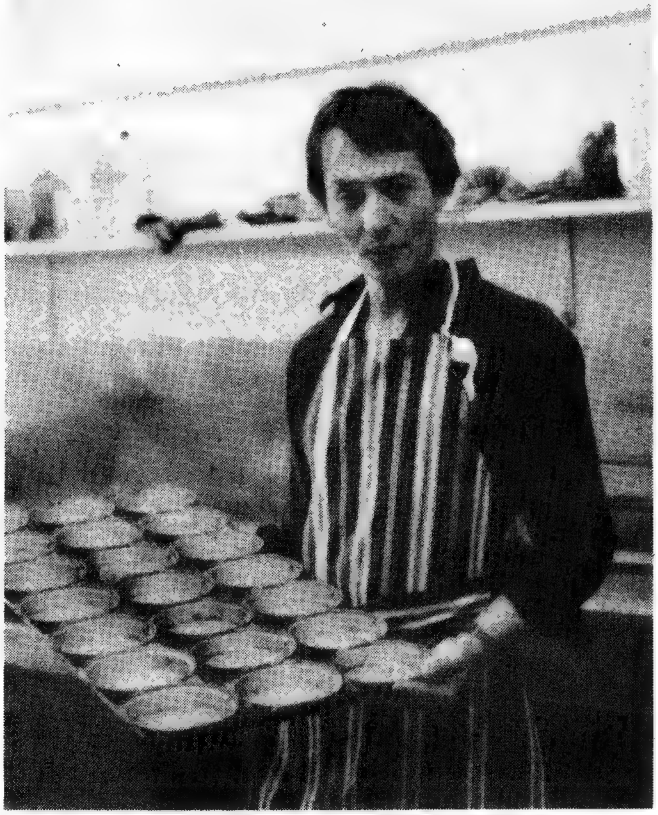
We have often felt like giving it up and if it wasn't for the generous support and encouragement of Gary's parents we would never have survived this far.

So we've made plenty of mistakes and had many hard times and disappointments. We haven't progressed a long way — Gary is still working a 12 hour day, six days a week. Our social life has been almost non-existent for the past four years and although we love gardening, camping and bushwalking, we don't have much time to follow these activities, especially since the birth of our son and heir, now nine months old.

But it has been a great learning experience, we've met some wonderful people and we've enjoyed ourselves tremendously. And, of course, we hope that our efforts have contributed something towards improving peoples' health and developing One Peaceful World.

Our dream has always been to live in the country and we are now working towards that, experimenting with some food lines that we can produce from a small home factory to help provide an income as we're too inexperienced at farming to make a living from the land in the beginning. Something new to look forward to!

We hope that our experiences can help others. If we can be of any assistance to people wanting to set up a small family business like ours, or advice on any aspects of natural food cooking we would be only too



Gary with multiple pie tray.

happy. We aren't experts, but perhaps we can help.

We can be contacted at *Harvest,'* Shop 5, Northbridge Plaza, Sailors Bay Road, Northbridge, NSW. Phone (02) 95 0466.

Here is our favourite recipe for you to try:

VEGETABLE PIE

Filling:

2 medium sized onions, diced.

Approx 3 cups vegetables, cut in ½ inch cubes — butternut pumpkin, sweet potato, carrots, etc.

2 tablespoons cold-pressed oil.

½ cup cooked rice.

½ tablespoon *miso* (soybean paste) creamed in a little hot water.

Spices or flavouring of your choice, eg garlic, ginger, mixed herbs or coriander seeds.

Method:

1. Saute the onions in one tablespoon of the oil until well cooked and golden brown. Add the remaining oil and vegetables. Saute for a short while, turn heat to low and simmer until *just* cooked. Add flavouring. Stir in miso and let sit, covered, for a few minutes.
2. Place the rice in a bowl, pour vegetables in on top. Cover with a tea-towel and let sit for a couple of hours, or longer. This allows the rice to absorb any excess liquid.
3. Meanwhile make the glaze and add the egg white to the pie filling. Stir well.

Glaze:

1 egg yolk, 1 teaspoon water, beaten well.

Pastry:

2 heaped cups whole wheat flour *(Demeter* gives best results).

½ teaspoon sea salt.

⅓-½ cup cold pressed oil, preferably chilled.

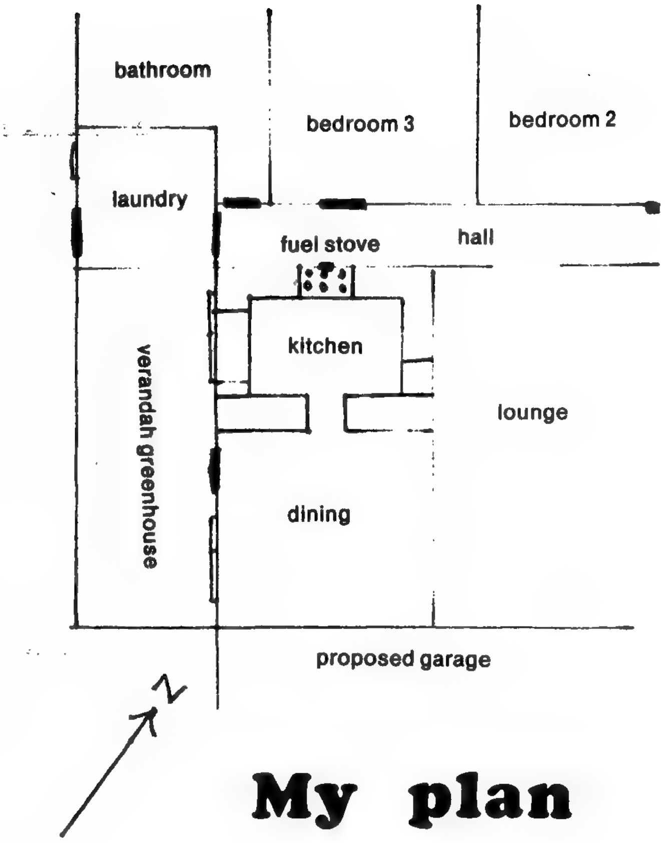
⅓ cup (approximately) chilled water.

Method:

1. Sift flour and salt into a bowl.
2. Make impressions in flour and add oil, cutting in with fingers until it resembles fine meal.
3. Sprinkle water carefully over the flour and gently blend with a fork until it is well mixed and can be gathered into two balls in the hand. Wrap in greaseproof paper and chill.
4. Roll one ball into a circle, approx ⅛th inch thick and 1 inch larger than the pie plate. Place in plate. Chill if possible (this stops the pastry shrinking).
5. Place the filling in, rounding slightly on top. Roll out the second ball. Brush edge of base with water. Place top on case and press gently together. Trim.
6. Glaze top. Make holes for steam to escape with a fork. If you wish, score top lightly where you will cut it. This makes it easier to cut and serve when hot. You can also decorate the top with leaves and other shapes made from leftover pastry — stick them on with glaze.
7. Bake in a moderate oven 350°F for about 40 minutes. Cool for a few minutes before serving.

Suggestions and variations:

Experiment with different combinations of vegetables, for example cauliflower and brocolli, cabbage, ratatouille (onions, garlic, red capsicum, tomato and zucchini), spinach and tofu. Also try adding well cooked beans, such as lentils or adzuki beans. Sprinkle the top with sesame or sunflower seed for a nice touch.



My plan

By JENNIFER SALAUN

There are a few things we had to take into consideration while planning our house near Mudgee, New South Wales.

The most important was the kitchen, as it has to be centrally located to utilise the heat from the wood stove in winter to warm as many rooms as possible.

The kitchen and dining areas are in the one room. This, we hope, will save on building costs, heating and cooling and give the place a nice friendly atmosphere.

As the house faces north east we will add a garage to the dining room side to protect the back verandah/greenhouse from the weather, which comes up the valley from that direction. This greenhouse will be used for growing herbs and the smaller salad vegies (as well as my collection of begonias) and to start seedlings for the vegetable garden. It should also be a nice spot to sit and sip herbal teas and knit with my 'home-grown' greasy wool.

We will have a kerosene refrigerator in the kitchen. This fridge is already in use in our bungalow and is proving to be quite efficient — it only smokes when we forget to feed it kero! The slow combustion stove will back onto the hallway wall and help heat that area of the house. This last point is a must in winter as our 6½ year old son suffers from asthma.

As part of the kitchen storage space I am hoping to line two walls of the dining area with shelves to store pickles, preserves and jams. I think this will be decorative as well as practical.

I could go on for pages with details about colour, tiles, floor coverings and so on, but I think that this is for personal choice.

Tasty tempeh

By CONNIE RAADSMA

In a letter in **Earth Garden No. 28**, Pri Sekhon asked for a recipe for tempeh (or tempe).

As I have spent many years of my life in Asian, African and South American countries, I have a good, tested recipe for tempeh, but I've never made it here in Australia and I think it is difficult to find the right starter.

Tempeh is **not** the same as tofu or tahu. These are cakes made of curd of soybean milk and tempeh is **fermented** soybean cake, highly nutritious, easily digestible and an excellent replacement for meat. It can also be added to many meat dishes, also fish and vegetables.

This is my recipe:

(1) Wash 500 gms of yellow soybeans in clean water and boil in 2 quarts of water for 5 minutes. Soak the beans in the same water for 18 hours.

(2) Remove the hulls from the beans by rubbing with the hands and drain out the hulls with the water. Drain the beans in a strainer and allow them to cool to room temperature.

(3) Put the beans in 1 cm or 2 cm layers in stainproof boxes of plastic, bamboo or wood. Small amounts of beans can also be wrapped in banana leaves, which should be perforated with several small holes.

The beans in the boxes are now 'inoculated' with a solution of the culture. Close the boxes with lids punctured with several little holes.

(4) These inoculated soybeans are left to ferment at a temperature between 25° and 30°C for 48 hours.

(5) Open the boxes and remove the cake-like substance and allow it to cool.

Tempeh 'steaks'

The most simple recipe is to cut tempeh in 1 cm thick slices and fry them in vegetable oil until they are golden brown — in just a few minutes. Adding salt is optional, but quite often not necessary. The steaks are delicious.

Inoculation solution

Make a suspension of the black spores or mould of **Rhizopus oryzae** or **Rhizopus oligosporus** with previously **boiled** water, cooled to room temperature. Inoculate the beans with this solution.

If tempeh is being made regularly a new inoculation solution each time is not necessary as a piece of the fermented beans may be taken for the next preparation (rather like using yoghurt).

Barrie Mather sent us another method for tempeh used by Stephen Gaskin of **The Farm** at Summertown, Tennessee, USA.

Soak soybeans overnight. Boil for 10 minutes to loosen husks. Chop or grind coarsely. Boil for 25 minutes, skinning off the husks as they rise to the surface.

Drain and allow to cool. Place in a clean pot. Add 1 tablespoon of vinegar to each 1 lb dry weight of beans. Add the starter. Incubate in covered shallow dishes for 30 hours at 88°F (31°C) plus or minus 2°F (1°C) and humidity of no more than 85%.

Incubating tempeh

In 'western' methods used for tempeh, the soybeans and starter are usually put in metal cake pans, casseroles (flat-bottomed) or aluminium foil boxes and covered with aluminium foil punched with holes every two inches or so to allow air circulation for the mould to grow.

To keep the container at ideal warm, moist conditions, you may use an electric oven with a low setting or a gas oven with a pilot light (place a pan of hot water in the oven also) or a styrofoam 'Esky' cooler with a light bulb inside.

Brian Hirt pointed out the article **Tempeh — Really Good, Really Cheap Food** in **Organic Gardening** magazine of March 1980 (pages 122-126) which included the sketch for an incubator shown.

The protein content of tempeh is very high, about 38 per cent, because the fermentation involved stops the tripsin inhibitor factor in soybeans which normally makes the protein unavailable for digestion until after cooking. Any legume may be used and lima beans, chick peas and broad beans make tasty tempeh.

Fermentation also makes the beans tender and binds them together firmly so that you can cut off slices or patties. Raw, tempeh tastes rather like cheese; fried lightly, the taste resembles meat, something like veal.

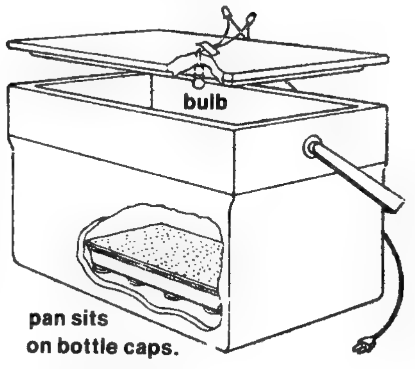
Tempeh will keep for only a day or two in the refrigerator but can be frozen or dried.

Sources of tempeh starter?

So far, we haven't located any sources of tempeh starter (called Tempus-starter in Japanese). We would be grateful if anybody can tell us where it is available. We've found that tempeh is on sale at some Chinese grocery stores and some Japanese stores, so a batch may be started by buying tempeh. In Sydney, tempeh may be bought at Perfect Australia Trading Co, 482 Anzac Pde, Kingsford.

TEMPEH INCUBATOR

Use a styrofoam picnic box, about 16 ins x 10 ins x 12 ins, punch hole in middle of cover and thread in ceramic light socket and tape to cover. Screw 7½ watt bulb into socket. Run extension cord to power source. From Organic Gardening, March 1980.



A traditional farmer

Thomas and Richard Crawford took up land south of Cessnock in the lower Hunter River Valley of New South Wales in 1828 and there is a village in the area called Crawfordville.

Their descendant, Edwin Crawford is a traditional farmer, who has never 'gone chemical'. On 764 acres he runs beef cattle and stock horses, grows watermelons, keeps poultry and has an orchard and vegetable garden. He was born on the farm, has farmed all his life and is proud that he makes a living from it.

Edwin is pleased to see a new generation moving out from the cities onto the land. He has a lifetime of experience to pass on to new settlers. We took our tape recorder and notebook to his beautiful, hill-and-valley farm, met Edwin and his wife Madge, ate some fresh persimmons, watched the flocks of grey guinea fowl and tried to tap some of this practical knowledge.

EARTH GARDEN INTERVIEWS EDWIN CRAWFORD

How would you characterise the Australian farmer?

In dealing with the day-to-day problems on the farm, in drought, fire and flood, the farmer is extraordinarily efficient. He's a mechanical genius. For example, with the improvements he carries out on factory-made machinery, which has been designed by qualified engineers, etc, etc. When this reaches the farm much of it is quite useless, some of it is completely useless and almost all of it requires modification.

At modifying and repairing this machinery, farmers are geniuses. All the inventions, the steps forward in agricultural machinery, almost always originate from practicing farmers.

Do you think this ingenuity, this genius for improvisation, is inherited?

To a large extent it is rising to the occasion, necessity being the mother of invention, *having* to do it. Those who *can't* do it fall by the wayside.

But the *average* farmer is politically backward. He is extremely prone to the propaganda of the Department of Agriculture, especially regarding pesticides. He's swallowed that hook, line and sinker. Some die, still bleating: "It won't hurt you."

Farmers are usually good veterinarians. They're good at civil engineering too. The mountaineers in this area will do a job of surveying a road in a few hours which would take a qualified engineer maybe weeks. They'll say: "We'll go up that spur ... we'll go round this ridge ... we'll put a culvert over that creek." They know the lie of the land.

Don't you think that there is so much specialisation these days that only the experts, like vets, can do anything?

There is a certain amount of truth in that. The product of the veterinary faculty at Sydney University is spot-on. There's no doubt they are top men. There's no way you can fault them.

What happens if there is any illness with your stock?

We call the vet. Our vets are very good and most of my veterinary work is done over the phone. I ring up and say: "Ian, the mare is trembling and sweating and limping slightly. What do you think is the matter with her?"

He says: "Give her 500 units of penicillin and ring me back tomorrow. It might be so-and-so." On the other hand, he might say: "That horse is bloody crook. I'd better get out there fast." But nine times out of ten, it's dealt with over the phone.

What about foaling? Is there any trouble?

Trouble with stock mares in reproduction is extremely rare. They're healthy animals, but of course you should keep them under observation when due to foal. The pelvic bones are a different shape to those of cattle. About 95 per cent of calving troubles are treated by the cattlemen themselves.

You can get quite a lot of trouble with cattle, especially Herefords, on the first calf. About 10 per cent, or even 20 per cent, can get into bother without human intervention.

What stock are you running?

About 60 breeding cows. We raise vealers and most of them are sold off at eight to 10 months old, weighing about 250 to 300lbs average. We sell them to a butcher and they go direct to the abattoirs. They leave here on Sunday night and they're slaughtered at 8 o'clock on Monday morning. That means there's no hassling around the saleyards.

They're Hereford crosses and other crossbreds, polled and horned. We buy crossbred cows and breed them back to a Hereford bull. The Hereford bull has dominant genes, so you get a predominantly Hereford calf from a crossbred cow.

Is it true to say that you never adopted farm chemicals?

I never, ever, took up the agro-chemical thing. At one stage, 20 years ago, I bought a can of 2,4,5-T. It's never been opened.

I never did change over. I've used wormicides on the animals — they *are* chemicals — for worming out horses and, occasionally, the cattle. When I first started to read about it, I realised that I had been an organic farmer all my life. There is still a sprinkling of blokes who are organic farmers and don't know it.

I use superphosphate. I don't use a lot of it, but Australian soils are very deficient in phosphorus, also in lime and dolomite. You can use phosphate rock now, that's been released fairly recently. It should be better than super, though it's slower acting.

In the Hunter Valley you don't get a premium for having your stuff organically grown. I once sent a consignment of tomatoes to Newcastle market and labelled them: *Organic produce — guaranteed free of pesticide residues*. They wouldn't buy them. They said: "These things will be full of grubs." That was 10 years ago. It might be different now, especially in Sydney.

Are the cattle healthy on the whole?

Oh, yes. With places where they use 2,4,5-T and various other sprays, you get these curly calves and horribly deformed calves. It's almost got to the situation of the early days in the United States, when the farmers moved in among the cattle and there was war. Well, if an irrigation scheme is started in cattle country and farmers are going to move in, the cattlemen get very uptight. They get very hostile, not because the crop farmers are taking over the country, but because they know their sprays are going to be drifting among the cattle.

While the life cycle of cattle is too short for the full effects to become visible, the Americans, for example, are very strict on pesticide residues. Any excess levels of residue get picked up by the American inspectors at the abattoirs and the property is put under quarantine until it's cleared up. They have strictly enforced levels of DDT and other chemicals.

In Australia, meat is not tested for local consumption, but it is for export. The same meat that's not suitable for export would be sold here through your local butcher's shop. There are no levels of pesticide contamination that would be unacceptable to the local trade. They're just not geared for it.

What kind of horses do you raise?

Stock horses. These are the Australian breed. They're an all-purpose horse, used for cattle, riding events, camp drafts, droving, in the high country, for sports, for all stock work.

I'm not clear on their origin, but I think they were originally bred for the Indian Army. They were known as the *Waler*, short for New South Wales, and probably came from English hunters and crossbred Arab stock. The much publicised quarter horses and Appaloosas are not keen on meeting stock horses in open competition.

What fruits are you growing in your orchard?

Just about everything. We've put it in for our own use and it's got a bit out of control. Every so often there's surplus fruit. It's a waste of time sending it to the market, so we advertise it as *"Pick your own"*, which gets a very good response.

All the temperate climate fruits grow very well. It was too cold for oranges on lemon stock, but we find we can grow citrus very well on Japanese *trifoliata* stock, although it's very frosty in the winter.

It's only a few hundred feet above sea-level, but the valley does get stinking cold in the winter. If you get oranges or other citrus grafted to *trifoliata* stock, plant them in September, when the frosts have finished, and you've got a full summer's growing ahead of them. They're quite robust by the next winter, so they'll survive and they're away.

It's cold enough to grow apples, of course. Starting at the top of the orchard, we have Valencia and Navel oranges, next several varieties of peaches, several varieties of apples, several varieties of pears, a few exotics, like quince, two species of persimmon, grapefruit, mandarins, figs and apricots.

I've tried walnuts, the country suits them, but they've died through misadventure.

Do you do any spraying in the orchard?

None at all. Early on I sprayed with sulphur compound to get rid of some lichens. We do get the odd fruit fly. They're not a major pest, though some years they might be bad. This year they were only in the late apples. We haven't mastered fruit fly, but I hope to do so by growing Russian garlic from now on.

To fertilise the orchard, we let the weeds grow up — we've got a successful crop of them right now — then rotary hoe them in as a green manure.

Do you use compost?

We make compost for the vegetable garden, but not for the orchard, it's too big a job. There's a whole lot of things I could be doing, but with the labour problems, it's just not on.

We grow all our own vegetables, though this summer was our worst ever, because of the drought. Last summer the drought didn't worry us because the dam which supplies both the orchard and the kitchen garden was full. But it ran out of water last November. It's half full again after the recent rains.

We grow all the temperate climate vegetables like carrots, sweet potatoes, Irish potatoes, turnips. In the paddocks we grow pumpkin, corn and melons.

We save our own seeds, especially for parsnips because their seeds must be fresh to germinate properly. The same with capsicums. The best thing to do is to buy a capsicum in the spring and take the seeds from it when you're ready to plant.

Parsley grows well here, but there's no passionfruit — it's too cold. I can't grow the sub-tropicals and that bugs me a little. I'd love to grow passionfruit and mangoes.

What machinery do you use for cultivation?

I use an Agro-plough. This is a great step forward from the standard chisel plough, in country where it can be used, which should be reasonably level and free from rocks and stumps. The stum-jump plough is not efficient and could cause serious accidents if used by an inexperienced operator.

The Agro-plough will *not* handle the rough, rocky, stump filled land where the standard plough has been such a success.

Where it *can* be used, the Agro-plough will leave all other forms of tyne tillage machines for dead, because of its minimum tillage of the surface, while busting up the subsoil and allowing maximum absorption of rainfall. At the same time, it facilitates the upward movement of subsoil moisture and promotes deep root penetration, so it's an invaluable tool in drought conditions.

They're very soundly constructed, to good engineering principles. Farmers have found little scope here for their talent for improvisation, except to face the wearing parts of the feet with oxy and to build much cheaper and better depth wheels from wheelbarrow wheels and so on and odd hunks of metal.

You can get inches deeper with the Agro and at the same time up a gear, a big saving with dieseline at about $1.60 a gallon.

How long have you been farming here?

All my life, since I was 12 years old, except for a couple of years when I was a seaman. I was born here.

Do you think organic farming can be viable?

In general, yes, but it depends a lot on the kind of land. In an area such as Maitland, for instance, where the timber has been cleared and everybody is spraying, to try organic farming in the middle of that mess would be impossible.

All the small animals have been killed, the lizards, frogs and birds are non-existent. All those things which are here in such abundance, the frogs feeding on insects, lizards, birds and beetles eating each other. In that environment it's not on.

If an organic farm was planned for a place like that it would have to be a big enterprise. To re-establish the natural cycle would require a large effort by a co-operative, *all* the farmers would have to be in it. I imagine earthworms would be quite rare in those conditions and nematodes and so on numerous and thriving.

Out here in cattle country your spraying is minimal, apart from 2,4,5-T used on blackberries, which is bad enough, but it's not used in great volume. There are natural controls with blackberries. The goat is a good one. It's labour-intensive but let's face it, it's effective. Goats love eating blackberries, it's natural for them.

I have controlled blackberries here without using sprays. I've slashed and burnt and rotary hoed where I could get at them and this has been effective. I've kept them suppressed. I don't want to wipe them out because they are such a beautiful fruit.

We keep free range fowls too, also ducks, geese and guinea fowl, which have gone wild. They're great insect eaters. They fly and go into the trees at night, but fortunately they don't eat the fruit.

About this time our tape cassette ran out and we had only brought one with us. The conversation turned towards new settlers and their prospects and Edwin Crawford had some more useful comments and advice, which we've deciphered from our scrawled notes.

You see new settlers coming into the bush. They're young, starry-eyed, with insufficient capital and a lot of romantic ideas. They are good people, with good ideas,

but all too often they bring with them the city attitude to work. Work today has become something to avoid at all costs, something to get through quickly and then leave behind. And rightly so in a factory environment making, say (ugh, yuk) transistor radios or plastic paint.

The *joy* of work has perished. People think they can get by with 40 hours of work a week and still be self-sufficient. They're wrong! Nothing will happen on a new settler's land without work and lots of it. *Ardua per Astra* would be a good slogan — through labour to the stars.

Too many people think it's all going to happen just as soon as they move to the bush. It isn't. Or it will only with a lot of hard work, sufficient capital and a willingness not to chuck in the towel when there's a setback.

It's extraordinarily difficult to make a living from the land, especially on small acreages. But my advice would still be to have a go. Don't be afraid to go on the social service. If you can't use money better than Malcolm Fraser, don't go on the land. Regard the dole as a subsidy to your care of the environment. There are more bludgers in employment than there ever will be on the dole. Observe your civil servant.

Don't *expect* to make a living from a small acreage, then you can get by and at least lead a better life than you would in the city. You should try to get 20 to 30 acres in the bush, aim at self-sufficiency and take casual work when it's available.

Starting in virgin bush you have a great opportunity to raise disease-free poultry. Start with day-old chicks and rear them under a brooder. If the diseases aren't there, the fowls will flourish. But if you start with pullets or other fowls you will bring in red mite, feather mite, scaly leg, Newcastle disease and other parasites and diseases.

Wild birds can also bring in poultry diseases, but they have their territories and it should be some time before this happens. This also applies to starting off with pigs.

And don't ever use plastic dishes or utensils to feed or water fowls, unless you like drinking from a plastic container that's been left in the sun yourself.

I think Australian farmers, including myself, have a lot to learn from the new settlers. They've brought back handicrafts, mudbricking, pioneer types of buildings and a new spirit to the bush.

Culturally and socially, this new return to the land has been like a breath of fresh air to an ossified rural scene.

If you are a newcomer, don't be afraid to ask your neighbours and local farmers for advice. They know the area, its climate and rainfall and they can tell you the patterns of floods or bushfires — and they are flattered to be asked too.

On daylight saving: A lot of things happen around sundown. You'll see that the cow goes to the calf at sundown, blowflies knock off for the day, chooks move in to roost and you shut them in for the night. Sundown is the best time to kill a sheep and hang it overnight and to pause because your work is over. These are the kind of natural rhythms you have to learn to look for. But Nature somehow can't adapt to daylight saving and change its schedule to bring these happenings on an hour earlier.

Lastly, follow the pioneer's rule, the one my Dad always drummed into me: *Feed your animals before you feed yourself.* That way you'll never forget to look after your farm animals.

ROTARY TILLAGE

Our friend Benny Renna is shown using his 5 horse-power *Victa* rotary tiller in his vegetable garden at Stroud, NSW.

Benny says the rotor-tiller is ideal for opening up large areas of ground quickly to establish garden beds. He has used it for jobs like levelling rough ground and for digging out soil for a duck pond.

"The thing that amazes me is that the blades don't have a mark on them, even though I've struck so many rocks," says Benny.

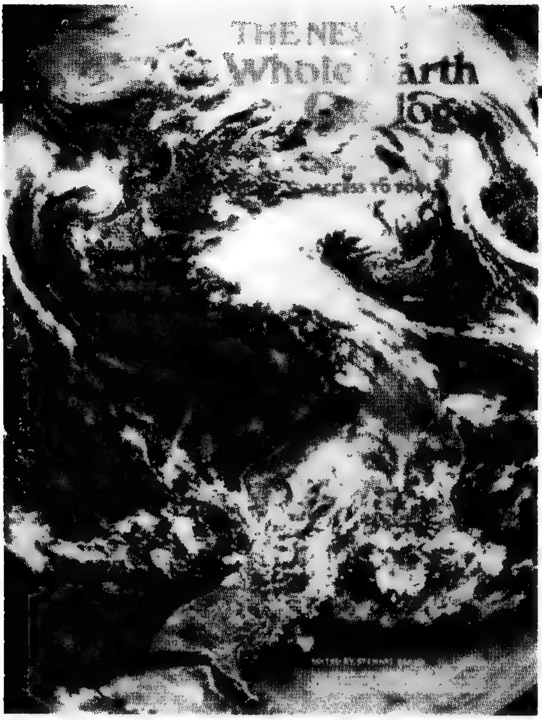
The machine has a Briggs & Stratton motor and a reverse gear which is spring loaded, so it must be held by hand, which makes it impossible to come back on your feet.

Benny, his wife Suzanne, and their four children, moved to the country from Sydney only five months ago, but they have already enjoyed good crops of beans, eggplant, zucchini, tomato, capsicum, spinach, lettuce and cabbage.

Using the rotor-tiller, he took only one "solid" day to clear a garden area of 100 square metres. It takes just a few minutes to remake the bed for a new crop, he says.

The tiller has a metal brake which digs into the ground, turning the soil over to a depth of 8-9 inches.

Another use for rotor-tillers is in chopping up and digging in green manure, mixing the organic matter into the topsoil.

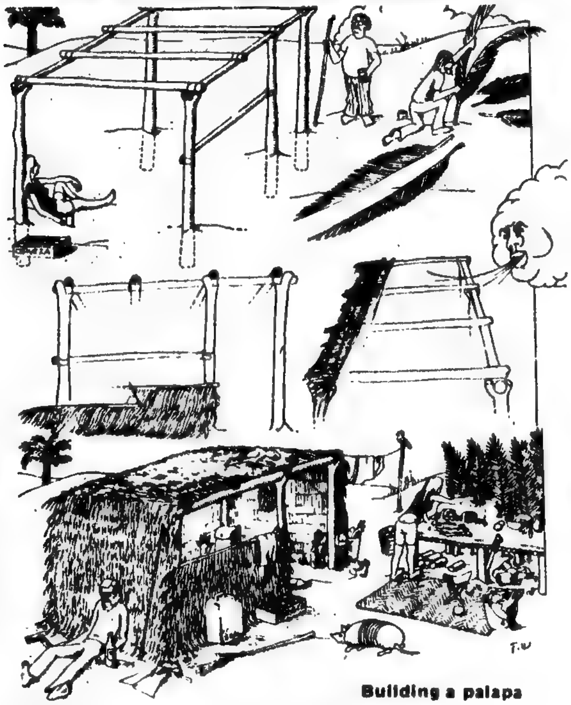


The Next Whole Earth Catalog

Hmm. An eye-opener, a mind-bender, a blockbuster (again). What can you say? As a tool, the Next *is sharper than any* Catalog *before it. More books, more hardware, sweeping, crisply laid out. As big as the phone book, but more useful. The* Next *is the best.* — *K.S.*

The Next Whole Earth Catalog ***
Access to Tools
Edited by Stewart Brand, Point, 608 pages, $15.95. Distributed in Australia by Tudor Distributors, Lane Cove, NSW.

Let the Next Catalog speak for itself in these extracts:



Building a palapa

A palapa (hut, also ramada, choza or jacal) is basically a shelter made of sticks and palm fronds (also called palapas). .They are very common on all the coasts of Mexico.

The People's Guide to Mexico

The best 360° coverage of traveling and short term living in Mexico that's going. Reading the book is almost like being there and going through the problems and frustrations, pleasures and wonders of dealing with a new environment, new people and new ways of doing things, but by golly every page, every step of the way you're learning something. Carl is candid, to the point, and leaves few, if any, questions unanswered in telling you how to handle just about everything: border crossing, driving in Mexico, public transportation, hitching, camping, indigenous living (living on the beach, building a hut, stove, digging a well, etc.) and scrounging for food, renting a house, restaurants, markets, stores, health, legal hassles, communication services, car repairs, the language and customs, cantinas and whorehouses, buying things, and so forth. A fantastic book, well written and really interesting.
—Al Perrin

Organic Gardening

●

More than once I've found myself on my back in the garden dirt, exhausted, imagining that the rivulets of hot sweat pouring off my face and chest are ice cold, and too weary to brush away the gnats that finally (ultimate gnat glee) bzz at will in my eyelashes. At such times I feel great peace, spent in a good cause. Once I caught myself saying, "This is fair dinkum."

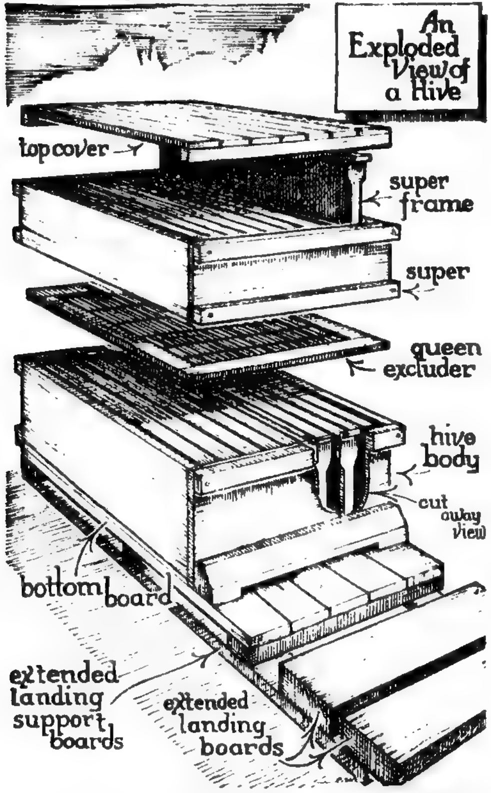
Queer phrase to be served up by my mind. I hadn't used it in years. Learned it from an Australian soldier on a bus ride when I was 15. He said, "In Australia, we say fair dinkum for okay. It means something's all right." Years later I spotted the phrase, *"Vere dignum"* in a Latin prayerbook. It means, "Fitting indeed." Fair dinkum is obviously an anglicized, latter-day version of *vere dignum*. Pretty neat trick for the mind to come up with that phrase. Surprised me.

Supers Added & date

January	30	• Queen Excluder & first super			
February	20	• Replaced old excluder with new one & added super			
March	12	• One Super	June	6	• One Super
March	15	• One Super	June	7	• One Super
March	20	• One Super	June	15	• One Super
April	4	• One Super	July	1	• Two Supers
April	12	• One Super	July	17	• One Super
May	27	• Two Supers			

—**Art and Adventure of Beekeeping**

Bless Those Eager Beekeepers



—**Mastering the Art of Beekeeping**

We can learn a great deal about each hive of bees by getting up at night and listening to what the bees are doing. I press my ear against the side of each hive body and listen, then listen to each super in turn until I get to the top super. Then I go to the next hive and listen in the same way, listening to each hive we own. In this way I am able to tell by the voices, noises, rustlings and fanning roar inside the hives what the bees are doing at present and what they are likely to do in the near future. I am also able to tell a few days in advance which hive is going to swarm by the "squeaks" the young queens make in their cells while they are still sealed in. They give these sounds most often just at or after dusk.

—**The Art and Adventure of Beekeeping**

Tipi suppliers

The joys of living in a tipi are many if the tipi is a good one and you use it intelligently. Here are two good tipi makers. Goodwin-Cole has had a fine reputation for many years (we've known of them for 10 years), and their products reflect not only good design but the proper spirit so important to this sort of enterprise. Nomadics Tipi Makers have also been around that long and are of similar quality and demeanor. They make a kit too, and claim to have sold more than 5000 tipis in the last 10 years! Both outfits sell canvas and other tipi necessities. Jeb Barton at Nomadics suggests avoiding flame retardant tipi covers (expensive and ineffective), but flame retardant tipi liners might be a good idea (though the chemicals may be toxic — they are to his workers). —J. Baldwin

40 below

40 above sweltering

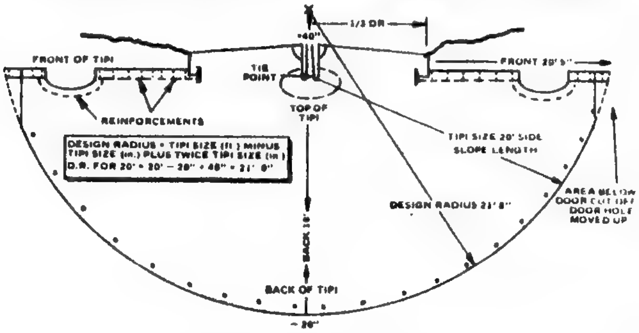
Nomadics Tipis 14' to 26', $221 to $511.

↓ **Goodwin-Cole Tipis 14' to 24', $171 to $349.**

Nomadics Tipi Makers
Catalog
$1

Tipi Kit Instructions
(You can sew your own from these plans.)
$4 postpaid
both from:
Nomadics Tipi Makers
17671 Snow Creek Road
Bend, OR 97701

Goodwin-Cole
Catalog
free from:
Goodwin-Cole
Tentmakers
1315 Alhambra Blvd.
Sacramento, CA 95816

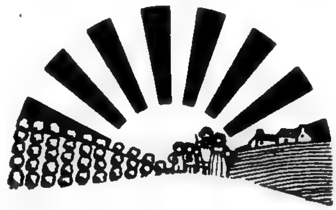

1/3 DR
40"
FRONT OF TIPI
TIE POINT
FRONT 20' 5"
REINFORCEMENTS
TOP OF TIPI
DESIGN RADIUS = TIPI SIZE (ft.) MINUS TIPI SIZE (in.) PLUS TWICE TIPI SIZE (in.)
D.R. FOR 20' = 20' − 20" + 40" = 21' 8"
TIPI SIZE 20' SIDE SLOPE LENGTH
AREA BELOW DOOR CUT OFF DOOR HOLE MOVED UP
DESIGN RADIUS 21' 8"
BACK 18'
BACK OF TIPI
20"

* These are U.S. prices. If ordering, send $U.S. by international money order, adding $2.00 to each item.

THE RISING SUN
NEIGHBORHOOD NEWSLETTER

The last war always seems amateurish.

access



BOOKS BY MAIL

Self Sufficiency Supplies

1981 Mail Order Catalogue & Product List,

256 Darby Street, Newcastle, NSW, 2300. Catalogue is free. We suggest you send a 50c stamp for postage.

This new catalogue from Brian and Shelly English includes all the essential publications covering self-sufficiency, with a particularly good list of works on energy — wind, water, solar, wood fuel, methane, alcohol and pedal power — also greenhouses, building, energy efficient and underground (or 'earth sheltered') houses.

Cooking, craft, environment, livestock, gardening and farming titles are all also included. The 'hardware' products for sale include slow combustion stoves, fireplaces, pot belly stoves, solar hot water systems, solar electric cells, wind generators and pumps, hydraulic rams, grain grinders and composting toilets.

Free Trees

Soil Conservation Research Centre, PO Box 130, Scone, NSW 2337.

Harry Willey reports: "Although I have sent out 5,000 trees in March there are still plenty of the most popular varieties left, for example: Bracelet Honey Myrtle, Silky Oak, Golden Olive, W.A. Golden Wattle and River Oaks.

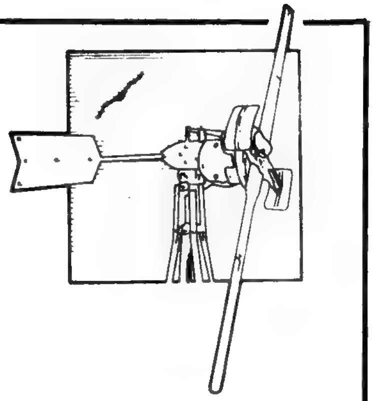
"Due to my continuing battle with the rabbits, lizards and birds, there will be no more Lemon Scented Gums, Bangalay, River Red Gums, Dwarf Sugar Gums or Spotted Gums until October or November.'

Wholesome Gourmet Cooking School

PO Box 68, GPO, Sydney, NSW, 2000. Phone (02) 29 5481.

Classes held at 34 Falcon Street, Crows Nest, over six week courses this winter (starting in June), will include Macrobiotic ($60.00), Japanese, including fish and chicken ($65.00) and healthy life cookery ($55.00).

Basic lessons teach balancing of meals according to Yin and Yang and acid/alkaline. Whole grains, beans, fresh vegetables, sea vegetables, fruit are used. Instructor is Marcea Weber of the East West Foundation.



Maryborough Appropriate Technology Centre

Contact Rob, phone (054) 61 3151, or write c/o M.E.R.F. Co-operative, 165 Railyway Street, Maryborough, Victoria 3465.

The idea is for "a place where people can look at the range of energy options that we have right now — the safe, clean, renewable ones such as solar, wind, biogas, fuel crops and so on".

Somewhere in Maryborough there will be gardens with organically grown vegetables, compost and mulching, orchards and vines, with hens, ducks and geese, ponds with yabbies (with the help of Ian Carstairs), shrimps, mudeye, mussels and blackfish for eating, fishing and study. There will be low energy homes, a display centre, greenhouse, nurseries, a workshop, lecture theatre and library.

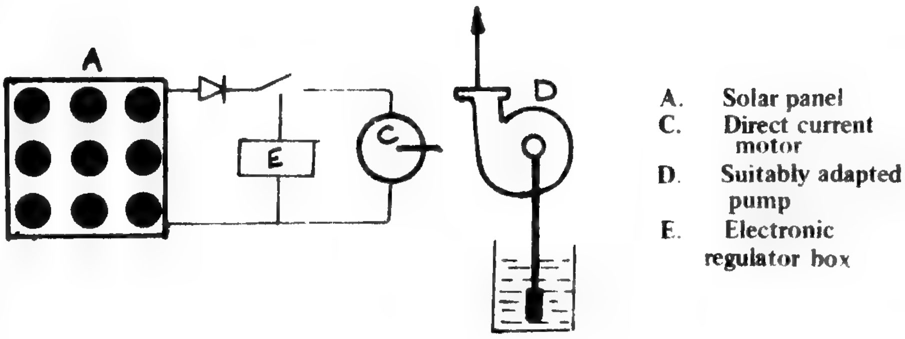
What is needed to bring all this about is the energy of people, their interest, skills, help and labour. You can help or become a shareholder in the co-operative.

ENERGY INFORMATION

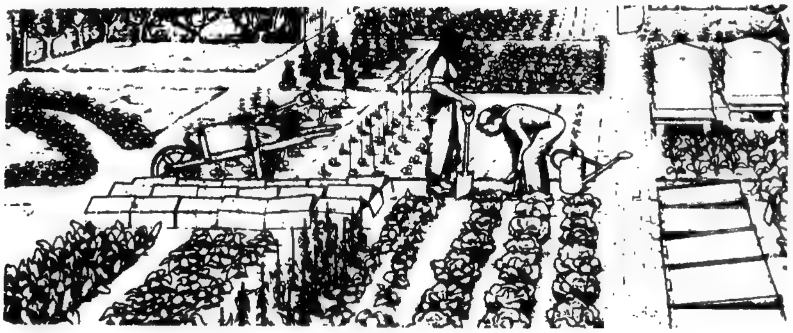
Leaflets, **free**, from South Pacific Commission, B.P. D5, Noumea Cedex, New Caledonia.

No 1 — **Gas Producer,** 2 pages
No 2 — **Solar Pumping,** 2 pages
No 3 — **Solar Still,** 3 pages
No 4 — **Solar Pumping,** 3 pages (with plans)

These leaflets give simple explanations of each energy device. They are illustrated with line drawings and photographs. Available in either English or French.



Human Development Programme



APACE Rural Development Centre (ARDC), Federal, via Lismore, NSW 2480. Send SAE for details of courses.

A.R.D.C. has a programme of practical skills and knowledge with phase 1 covering the whole gamut of natural food production including humus, composting, tools and garden layout through to cultural methods such as permaculture, Bio-dynamic French Intensive, bio-ecological, ring culture, dry farming and Fukuoka in 30 units. It's a kind of non-university education in earth gardening!

Phase 2 is personal and community health, at village level, phase 3 human development, preparation for culture shock and rural-urban attitudes and phase 4 small scale agro-industrial development — in the form of wind, water, solar, animal and human energy.

(Information from Roger Elliott)

Phase One: Prepares a participant for volunteer service in a depressed area in a developed or less developed country. Together with a shovel, digging fork and ten kilograms of seed, travel to any location and demonstrate: production of a complete diet; seed selection and propagation; permaculture design.

letters

Dear Sirs/Ladies,

First may I heartily congratulate you for such an excellent publication. My lifestyle has changed since I first entered your covers. My main reason for writing is to ask if any **EG** readers can tell me where I can obtain some fertile seeds of the caper vine (Capparis spinosa). One Victorian seed company has over the past two years sold me 8 packets of non-viable seeds and I am beginning to give up hope of ever pickling my own.

Best wishes, Mike Welch, 39 Swan Street, East Guildford, Western Australia 6055.

Dear People,

We are in the formative stages of establishing our tropical survival system and, with such a variety of new and diverse crops, we find ourselves very much in the experimental field after the first and most difficult years. Len Muller's articles are a good basic introduction to the wonders of tropical plant culture, as he has a good working knowledge and years of experience with these crops.

We hope to be able to contribute to this bank of knowledge in the future as our trees grow and we establish a permanence in our system of tropical agriculture. We are presently growing our first market crop of tropical vegetables — jicama, sweet potatoes, cassava, yams and winged beans — to see how they can stand up to the wet season. Looking forward to the new cycle in the new year's coming.

Peace surround you, Lauren Gartrell, El Arish, Qld.

* * *

Dear Lauren — We hope to have a story soon on growing greens in the wet season from Len Muller. — **Keith & Irene.**

Dear Keith & Irene,

We have purchased a lovely valley near Cairns in north Queensland. It has two small rivers, a 100-foot waterfall and good soil. We are going to develop the Australian branch of the Hippocrates World Health Organisation there, with the emphasis on teaching. We want to create a model; a place where people can see the latest in energy saving and ecologically sensible housing; solar and water-wheel power; recycling in action; the benefits of reafforestation; pest control without poisons; fertilising without petro-chemicals; and good health through good habits.

Though we don't have millions to spend, we're dedicated and we know that, with time and a great deal of work, we can create a worthwhile community, perhaps of international significance. We wholeheartedly welcome any advice or assistance **Earth Garden** readers could provide, in both designing and building our concept. We will remain here in Los Angeles until about July 1981 and invite interested persons to write to us.

Yours for a healthier world, Elaine Hollingsworth, 468 S. Roxbury Drive, Beverley Hills, California 90212, USA.

Dear Irene & Keith,

I would like to ask your readers' help in obtaining publications for our Community Education Training Centre Library in Suva, Fiji. Each year 40 Pacific women between the ages of 20 and 40 attend a 10 month live-in course which includes: community development; family food and nutrition; housing and household equipment; home management; family relationships and family planning; maternal and child health; clothing and textiles; family sanitation and health; local handicrafts; consumer education and business skills.

Earth Garden readers must be among the best informed in Australia on relevant publications in these fields and I'd be glad to correspond with any person, publisher or bookseller with anything — gift, sale, exchange, catalogue or advice on sources to offer. For those interested in exchange, we can supply our **1980 Select List of Publications.** To save time and postage use our Sydney address:

The Librarian,
C/- South Pacific Commission Publications Bureau,
PO Box 324, Grosvenor Street, Sydney, NSW, 2000.

I look forward to hearing from you.

Best wishes, Bess Flores, Librarian, South Pacific Commission, Noumea, New Caledonia.

Dear Irene & Keith,

I find **Earth Garden** most interesting and useful. I have tried many recipes, have bought my stone grinder and grind my own wholemeal flour and bake my own bread, scones, cakes and biscuits. They are most popular with the family! I spin my own wool, grow my own fleece — sheep and Angora goats — and have my own bantam hens, which keep us supplied with more than enough eggs. But I'm not having much luck growing vegetables. It seems to be too cold in winter here and in summer we don't have sufficient water, so I've given it away as a hopeless job.

Thank you once again, Valda L. Cook, Woodend, Victoria.

One room at a time

Di's first (octagonal) room.

Rhyndaston, Tasmania

By Di Elliffe

Earth Garden readers in other States may be interested to hear about someone moving back to the land in Tasmania.

About 18 months ago I bought 40 hectares (113 acres) of land here — a beautiful, bushy hilltop just above the village of Rhyndaston, 40 miles north of Hobart.

I am keen to settle here soon and start to build up a small community of like-minded people. I am hoping that other people will buy shares in this land, as tenants-in-common.

At the moment, I am working part-time in Hobart with the environment movement. This way I am able to save slowly for the land and spend most weekends in the country working on my house. I've found that, for me, it isn't possible to work full-time at any job just in order to save money faster. I go crazy.

I have just completed the first room of the house — with a little help from my friends! I used wooden stud frame construction, getting rough sawn timber from the local mill, delivered right to the site, free of charge, by one of the neighbours.

The foundations are piled up rocks from around the site, which sit together firmly, believe it or not! The octagonal room faces north to make the most of the sun and also the view over the Rhyndaston Valley.

The flat shed roof has a large overhang on three sides for the greatest amount of water collection and also to provide shelter below for stored building materials. I really love the feel of the octagon, which I designed as a compromise between a square *(boring)* and a circle — least surface area, so that the least amount of heat is lost to the outside in winter. One side is raised to fit in a sleeping loft.

I must say that I probably won't build any more many-sided rooms. They take a great deal more brow-furrowing and mental strain, as you calculate (and cut) all the angles in not only the walls, but also the floor, the ceiling lining and so on. Figuring out a roof line that won't look ridiculous on top of it is hard and so is designing additions.

My original plans were for six interlocking octagons, which would have worked very efficiently. But now that I've built one octagon, my ambitions have changed somewhat. My next room will be rectangular. It will include kitchen, bathroom, pantry and there will be a greenhouse on the north wall.

I am trying to design the completed house to be as energy-conservative as possible. Some features are:

- 100 mm fibreglass insulation in all walls and ceiling;
- large window area on north walls and almost none on south walls;
- double glazing where possible (within the constraints of using recycled windows, that is;)
- greenhouse on north wall;
- vents to encourage flow of warm air from greenhouse into house and from lower level to higher level;
- entrance hall at main door, to serve as an airlock between inside and outside;
- Franklin stove in living room and slow combustion stove in kitchen for hot water as well as cooking.

In a month or so I will be able to afford a panel of solar cells, which will charge a 12 volt car battery and my solar-electric system will start to materialise. It would cost me at least $1,000 to get mains electricity put on to the land, which is one factor behind my decision to go solar.

Another is the effect of the current (!) power debate going on in Tasmania, where the Hydro-Electric Commission is determined to flood yet another beautiful river in order to satisfy their own predictions on increasing power demand. No way am I going to add fuel to their fire.

I am very interested in the idea of *permaculture* and I planted fruit trees as soon as I bought the land. These are all doing well and more will be added this winter. Quite a few food-bearing shrubs went in last summer and most are doing well, with a couple of banana-passionfruit vines that received minimal attention, bearing yummy fruit.

This is in basically the bush soil, so I am looking forward to bountiful harvests when I get around to adding lots of manure, seaweed, etc. Two dams (one full, one just built) should ensure continuous water supplies for crops and trees.

I plan to protect the bushland and wildlife from my planned cultivation area by developing only the central (flat) area and leaving the surrounding (steeper) bush intact. This should provide a natural corridor for the animals and birds to move around in and enable an untouched bush ecology to survive.

Rhyndaston is more a collection of houses than a village, I suppose. There are lots of nice people here and I've made many friends. Some neighbours are turned on to permaculture, some are organic gardeners, some are Aussie battlers and some are just plain eccentric. There seems to be quite a movement of new people into the area, which I welcome.

With friendly, social neighbours, who often help me out in practical ways (with machinery and advice), I feel that living in such a small community is definitely inviting. The nearest school is at Oatlands, a half hour's drive away and the school bus comes right to my street. The main north-south railway line in Tasmania stops in Rhyndaston and I hope to use this for delivery of goods in the future. At the moment I take everything to the land by car because it's only an hour's drive to Hobart. It couldn't be much easier, could it?

That's a brief rundown of one person's adventures in Tassie. If any readers are interested in joining me on this patch of land, I can be contacted through the Tasmanian Environment Centre. A quarter share will cost about $2,400.

Di Elliffe, 210 Bathurst Street, Hobart, Tasmania, 7000. Phone (002) 34 9908.

Cheap fridge

A refrigerator is pretty essential in the tropics and a good one that will work well in the bush, away from electricity and gas supplies, is rare and expensive.

One day in a big city I bought a very old, thickly insulated Electrolux gas fridge for $10, thinking that I could plug it into a gas bottle and have cheap cooling at home. It seems that a town gas to LP gas conversion is not that simple. It involves expensive bypass valves, special gas shut-off devices and a couple of very heavy bottles which must be hauled into town every few weeks for refilling.

While at the tip one time I found an old, very rusty kero 'fridge. I noticed how similar the "works" looked to those of my Electrolux, so I grabbed the tank, which turned out to be clean and free of holes, but in need of a new wick and holder. These bits cost $21.50 from a Cairns shop that appears to specialise in obscure spare parts.

I removed the gas jet and control knob and rolled up the thermostat probe. I didn't take it out as this would have left a hole. This gave me plenty of room for the tank and burner.

The only critical requirement is that the space from the top of the glass flue around the wick to the bottom of the baffle hanging inside the chimney be exactly two inches. I achieved this with some carefully chosen offcuts of timber slid under the tank.

The only maintenance is once a fortnight when I have to pull a rag through the chimney and blow a few bugs out of the wick holder. During the hottest months it only burnt a pint of fuel a day and remained below 4 deg C inside. Probably it will burn less in winter, so a 44-gallon container should last a year. Maybe one day I can run it on home-made methane!

I am now thinking of replacing the 240 volt AC motor in a freezer with a 12 volt DC one, powered from batteries charged by a wind generator. Hmmm.

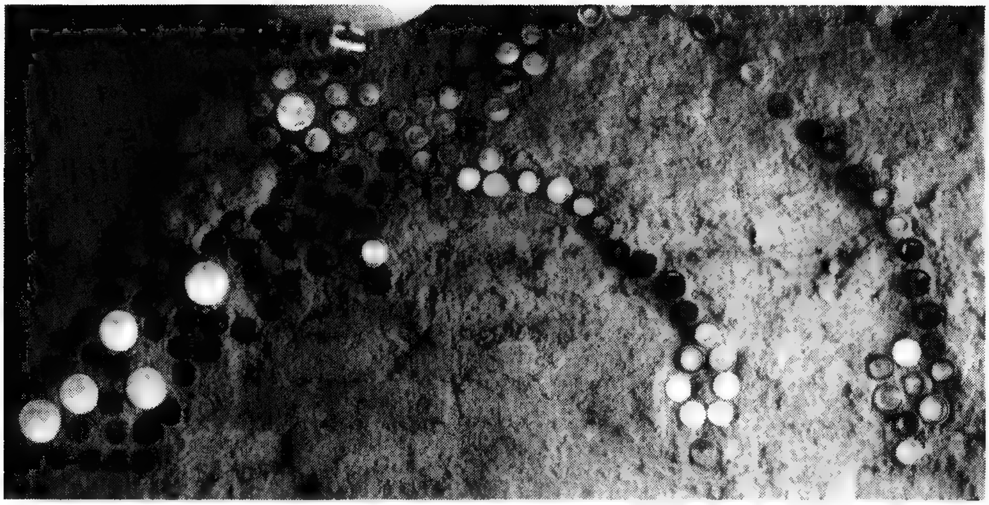
Peter Mitchell

SOUTH PACIFIC FOODS

South Pacific Commission Community Education Centre, 1980, leaflets, 4 pages each, illust.
Leaflet 1 — Taro, a South Pacific speciality.
Leaflet 2 — Pawpaw, A food for people.
Leaflet 3 — Mango, A fruit for the family.

These excellent leaflets on local South Pacific food plants feature a colour photo of the plant, with text on its nutritional value, methods of preparing, storing and cooking the foods and traditional recipes.

Free, from **South Pacific Commission,** B.P. D5, Noumea Cedex, New Caledonia.



Glass bottle mosaics

By PETER KURZ

Beer bottles, wine bottles and flagons litter the roadside, fill the tips and rubbish dumps (and use up power resources) *once* — only to be discarded after a happy evening.

They could be used to create an exciting light source in your mudbrick home rather like the colourful glass 'mosaics' I have built into the walls at the *Adobe Flats.*

In this project I have combined either brown beer or wine bottles, clear glass bottles and clear and green flagons. When preparing the bottles at first I thought the brown colours would be the most pleasing, but after assembling them in the mudbrick wall, the green wine bottles were voted tops by most people.

The combination of one-half brown with one-half clear glass gives a glowing amber colour but the two browns together only show up when the sun shines horizontally on the bottles (early in the morning or evening) and then glow red.

Rather than using complete bottles with the necks sticking out — a technique used when complete walls are made of bottles kept together with cement — I thought there would be a greater light effect by cutting the bottles at 5 inches from the bottom and then joining two together with electric tape to make a 10 inch tube of coloured light.

In later projects I have used silver foil from sisalation paper offcuts to hold bottles together. This increases the reflective quality of the light and holds the bottles together more firmly.

Whichever way is used, there is then no problem with water collecting in the bottles, making a breeding ground for mosquitoes or forming sediment which cuts off the light.

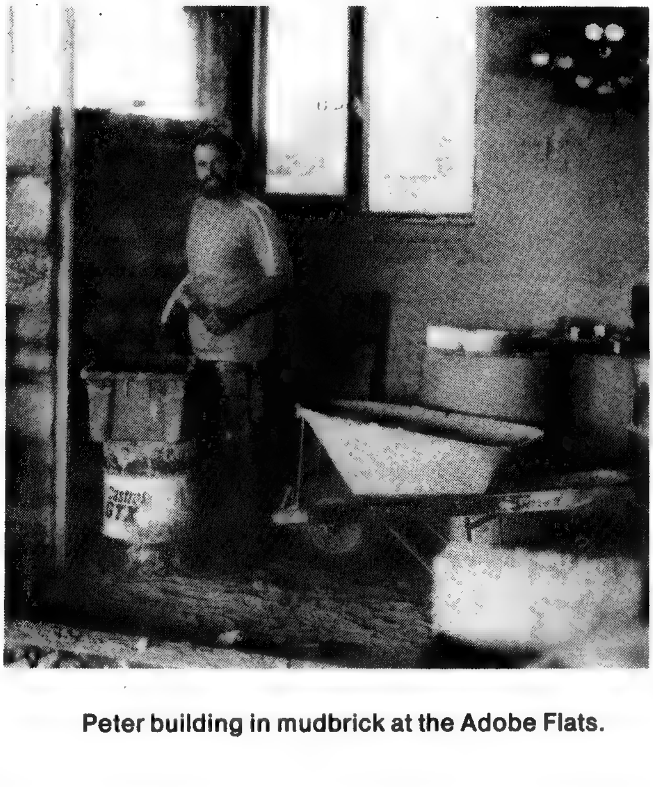
Bottle cutting is very quick and easy with a bottle cutting outfit. You can also use it to make drinking glasses from bottles.

The Jaeco Company, PO Box 380, Norwood, South Australia 5067, sold me the basic outfit for $20.00 (send sae for current prices). To heat and break the glass I am now using a gas torch on a Porta-gas bottle and find this worth the extra money.

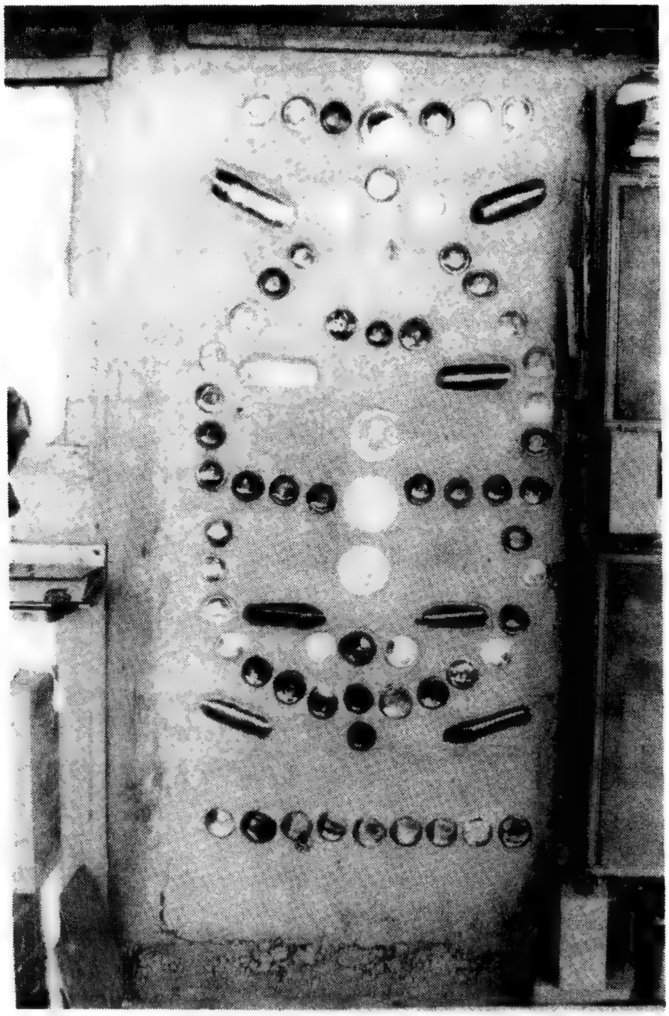
The suggested candle takes ages to separate the cut. Remember that a full sized mosaic, say of a seahorse or a dragon, can take a few hundred, if not a few thousand, bottles.

Flagons allow more light and two clear flagons can give an intriguingly distorted picture of the outside world.

The bottles have to be *very clean* on the inside to allow maximum light to pass through and the electric tape or silver foil is only there to keep the two halves together until the tube finds its permanent place in the wall and the mud has dried out.



Peter building in mudbrick at the Adobe Flats.



To have freedom in placing the bottles, the clay must be used *without* pre-drying as with mudbricks. Therefore, the wall will slump if it goes up too quickly and cracks will be more noticeable, though these can be filled in later with mud (and patience).

The horizontal bottles in the picture are uncut and do not shine as strongly, as there are three bottles laid horizontally into the mudbrick wall. I found the best colour effect resulted from using two clear bottles, with a coloured bottle on the inside.

Tie the necks of the bottles together, place strong cardboard pieces below and on top to prevent the mud seeping in between the bottles and cutting out the light. The standard 10 inch thick mudbrick wall is perfect for three bottles. The necks can be mudded in and seem to keep the bottles in place and in the wall.

Of course there is a lot more work to a mudbrick wall which includes a bottle *design,* but the most basic arrangement will glow on the wall, to your enjoyment.

The extra work comes when the wall is drying out and the cracks have to be filled in, the bottles cleaned and the outside wall protected from attrition. To stop the clay running down over the bottle ends and obscuring the rays of the sun, the wall must be weather-proofed.

I suggest that you seal the outside walls with a silicone-based water repellant like those used on brick or concrete walls, or with a coat or two of bondcrete.

From then on the daily rhythm of the sun and the seasons will shine into your home, painting a picture in ever-changing intensity of colour and light.

More colours!

Since I wrote the story on bottles I have used the technique some more in two new apartments at the *Adobe Flats*, with the result shown in the colour photo on the back cover.

The colours, of course, aren't anywhere as good as the original. You really need to be there to appreciate it because the full effect comes only with sunlight.

What I've learned from this experience is:

1. For more colours beyond the basic white, brown and green bottles (including the olive produced by green/brown), I have used cellophane paper in glowing reds, blues and mauves.

Cut one or two pieces of cellophane paper roughly to the diameter of the bottle tube and insert between the two halves. I don't know how long the cellophane will last, but hope it doesn't disintegrate quickly.

2. The second interesting find was that bottles set into the interior walls will also shine, as there is nearly always a light differential from room to room. This is particularly effective if there is a dark bedroom next to a living room.

Of course, they all light up at night with the help of a torch, which provides a lot of fun for the kids — and the bigger kids too!

The Adobe Flats are at Mallacoota, Victoria. Peter Kurz wrote about building them in *Earth Garden 20.*

Power Possibilities With Water

Mario Zolin (BE), A *Malemijo* Publication, 1980, 24-page booklet, illustrated. Price $2.00 posted from PO Box 31, Swifts Creek, Victoria, 3896.

In this clearly written booklet, Mario Zolin, engineer, inventor and co-editor of *Gone Bush,* takes a look at small-scale water supply and practice. With text and line drawings he explains to the "intelligent layman" the theory, background, physical requirements and pros and cons of capturing the energy locked up in water.

He defines a small-scale system as one with a power output of less than 20 KW (about 27 horsepower in old imperial units) and says the most common size "seems to be in the region of 2 to 5 KW which is enough power to supply the typical household."

The idea is to study the different methods of producing power from natural streams and reservoirs and get a grasp on your requirements before "plunging in" head first, water wheel at the ready. A set of appendices helps you calculate water flow, the energy in a stream of water and the head or fall available.

Gone Bush No. 10 (March 1981) also has a group of practical articles on water: on small-scale trickle irrigation, spray systems, domestic water supply (and plumbing) and grey water collection and disposal. Lesley Zolin (the other co-editor) tells how she built a laundry from a verandah and there are stories on power generation (petrol engine variety), ducks and summer cooking ideas.

The price of this issue is $2.00 posted from the address above, but a year's subscription is good value at $12.00 (six issues).

HERE AND THERE

John on the tractor, with friend Nic and children (not ours) at Sunshine Coast in 1977.

A few places in Queensland.

By MARY THIRY

We first decided to get out of Brisbane in 1974 — after much discussion of the pros and cons because John had his own business and it was fairly profitable.

But when we put our house on the market we had outpriced ourselves in our area. So then came the wait, the drop in price and getting discouraged. Finally, in August 1975, after another price drop, we sold and were on our way north.

We had no real destination in mind but, as John had grown up in Cairns and we both like the area, we headed in that direction. We called in to see some friends at Gin Gin, near Bundaberg, who soon persuaded us to look at the real estate around there and we finished up buying a 15 acre old farm.

The 'house' was about 70 years old, more like a hut, built from bush timber uprights and weatherboard. The previous successive owners must have decided that the back of the house and the side of the chook pen were the best places to throw out the rubbish. We took away 11 trailer loads of broken bottles, empty tins, old batteries and rusty iron. And that's not counting the endless loads of other junk in the sheds and paddocks!

We stayed there for only eight months as we found that we were too close for comfort to sugar farms which carried out extensive aerial spraying. When our bees started dying and we had to empty all the water tanks because of the poison on the roof, we'd had enough.

So we put the place back on the market and soon signed a contract. We had worked like crazy to get that place cleaned up, built a large dam and planted 30 grafted fruit trees. We learned a lot in those few months about cows, ducks, geese, chooks, vegies, fruit trees and tractors. As John was working part time as a builder's labourer, he also picked up some basic skills for building our next house.

Our next thought was to shift back

down around Nambour. We were reading *Earth Garden* by this time and we knew there were a lot of readers in this area. We also knew that John could easily get a job there — he is a signwriter by trade.

Once again, we were packing and moving, first of all into a caravan park to start the search. This time we had a better idea of what we wanted and decided that the bush was for us. We had high hopes for 100 acres or more, but the sort of land we wanted was scarce. When we finally found 20 acres about 12 miles from Caloundra it took all our money.

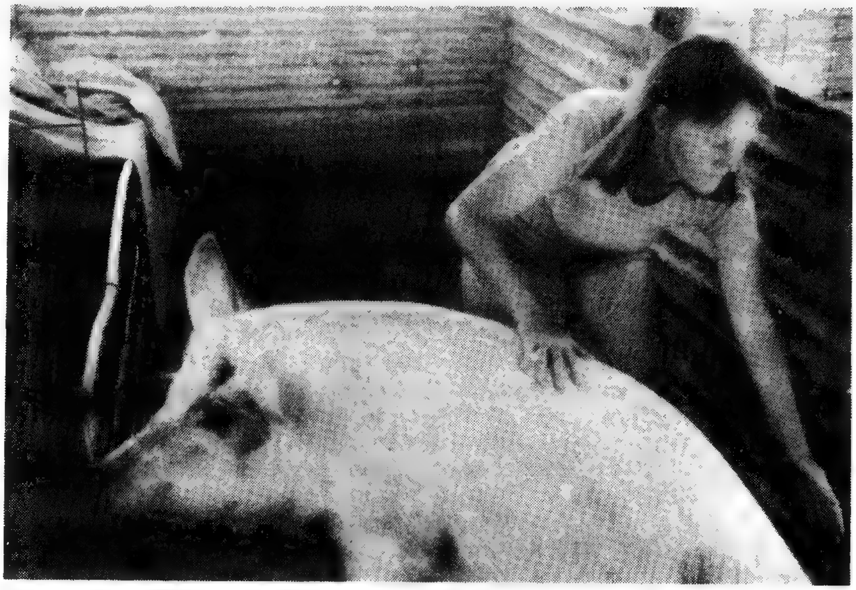
It was a beautiful spot, with only about five acres cleared and the rest really tall trees, with a few acres of dense rainforest. A creek on the boundary was polluted by those farmers through whose properties it ran. Happily there was plenty of uncontaminated underground water.

We moved onto the property with our 15 foot caravan and its two adults, four children aged 12, 10, 9 and 6 and a dog, which was a pretty tight squeeze. Next to the bank for a loan to build a house. I was lucky to get a job doing secretarial work, which left John free to work on the building.

Within six weeks we had our shell up and moved in and began to work gradually on the inside until the money ran out again. So it was back to work for John for three days a week, as he can make more in that time than I can working full-time. This left me time for the trees, vegies and animals. We planted more than 100 fruit trees from which we enjoyed peaches, pawpaws, bananas and passionfruit and, this year for the first time, citrus fruit. The other trees still haven't fruited.

We kept chooks (and had a ready outlet for our excess eggs), two house cows and some pigs. Then after two years of this earthy paradise, the outside world caught up with us. The local Shire altered its by-laws to allow subdivisions as low as half an acre. Everyone jumped on the band-wagon, most land was cut into two acre lots and so we had an increase in neighbours, traffic noise, pollution, complaints about our pigs and, of course, a huge increase in rates (they went from $20 a year to over $250).

Sadly, we again made the decision to sell. This time we had no trouble at all. The developers snapped it up and we made a good profit. The hardest part for us was selling our animals, but as we had made some good friends of the E.G. variety, we were able to find good homes for them all.



Mary with Petunia the pig, 1978.

This time we were determined to get to Cairns.

We knew that coastal land would be too expensive for us because of the sugar cane, but we were still hopeful of finding that elusive 100 acres somewhere on the Tablelands for a reasonable price.

Were we in for a surprise! Bush blocks are just as scarce up here as, they are down south because everything farmable has been cleared for maize, tobacco, rice and dairying. And the prices are high. They start at around $500 an acre and some are around $1000 an acre. The only places we would have liked to buy were $60,000+. If we spent all our money on the land, we would be right back at square one, borrowing money from the bank.

It looked once again as if we would have to forget our dream of a large acreage and settle for something smaller. We even made an offer on a 45 acre block in our price range. An agent happened to mention that he *did* have a 153 acre block, but as it had no access and no electricity *we wouldn't like it.* The land had had two or three contracts on it, but all had fallen through as the banks wouldn't lend on it. This was right in our price range, but it sounded too good to be true.

We went to look and fell in love on the spot. Apart from the access problem, it had about 40 acres of 20 foot high lantana. On the plus side, there were two permanent creeks, one a beautiful, rocky, boulder-strewn delight with waterfalls and swimming holes. There was fertile red volcanic soil, about 100 acres of rainforest, undulating and steep hills, State Forest on three sides, lush pasture where the lantana hadn't taken over tree ferns, elkhorns, orchids and an abundance of wildlife.

The owner had been trying to sell for eight months, was in financial troubles and just wanted 'out'. So we became the proud owners of a little bit of heaven.

Unfortunately we aren't living there yet, until the bulldozer contractor puts in a track and we can build a shed to live in. So we are stuck in the suburbs of Cairns, with noisy neighbours within spitting distance and not having much to do — that's the reason why I have time to write this story for *Earth Garden*.

The next move should be our last. It has taken five years and four shifts to get what we really want. But we don't regret a moment of it. We have learned a lot in that time and we hope we won't make any of the silly mistakes that we have in the past.

Our advice if you are still looking for that dream piece of land and despairing of ever finding what you want for the price you can afford, is to keep looking. It's out there somewhere just waiting for you.

A watering system

The current drought has been a sharp reminder of the need to conserve water in our dry continent.

Trickle or drip irrigation has solved the problem of watering plants for these two *Earth Garden* families. Water is saved with the trickle system because it is delivered to the base of each plant or tree and feeds its root zone instead of the nearby weeds.

BY PAT WATERS

Our garden at Paddy Melon Creek is about ⅓ of an acre. It is situated on creek flats, but it's a fair climb down to the water.

Initially, we set up two watering systems, one for the houses and one for the garden.

Watering systems can make or break a garden.

Our first two gardens weren't actually *lost* because of the systems we employed, but they suffered enough for us to reject them at the end of each season and try to think of something better. Perhaps others will benefit from our experiences?

Year One

We set up a *Honda* 4 horsepower pump (second-hand, with attached problems), connected to a 2-inch soft hose, which in turn joined a fairly expensive sprinkler.

This sprinkler could be adjusted to do half or full circles and could cope with the velocity of water coming through. Including the pump, this watering system cost us about $300 to set up.

Problems

Being second-hand, the pump gave us no end of starting problems. This involved us in frequent overhauls and visits to our local mechanic.

We also made the error of leaving the pump *in situ* over winter without starting it up. Bad news next spring. Small motors need to be turned over regularly or they will seize up.

It's an easy trap to fall into, forgetting about a tool once it has served its purpose for the year, then being sour when it won't operate properly next season.

The sprinkler was a one and only. Though its arc was enormous, it did not reach everything, it missed the things closest to it, the things furthest away and corners of beds and its shower was interrupted by tall plants.

We had to move the sprinkler three times to cover the area properly and still do back-up watering with watering cans, using up too much time and energy.

Also we were watering not only the vegie beds, but also the garden paths and the blackberries which border our garden and which are only held back due to our furious batterings, smotherings and evil thoughts.

Year Two

So the next year we used the same pump and the same flexible hose, but we connected to it and placed across the centre of all the garden beds a 2-inch pvc pipe.

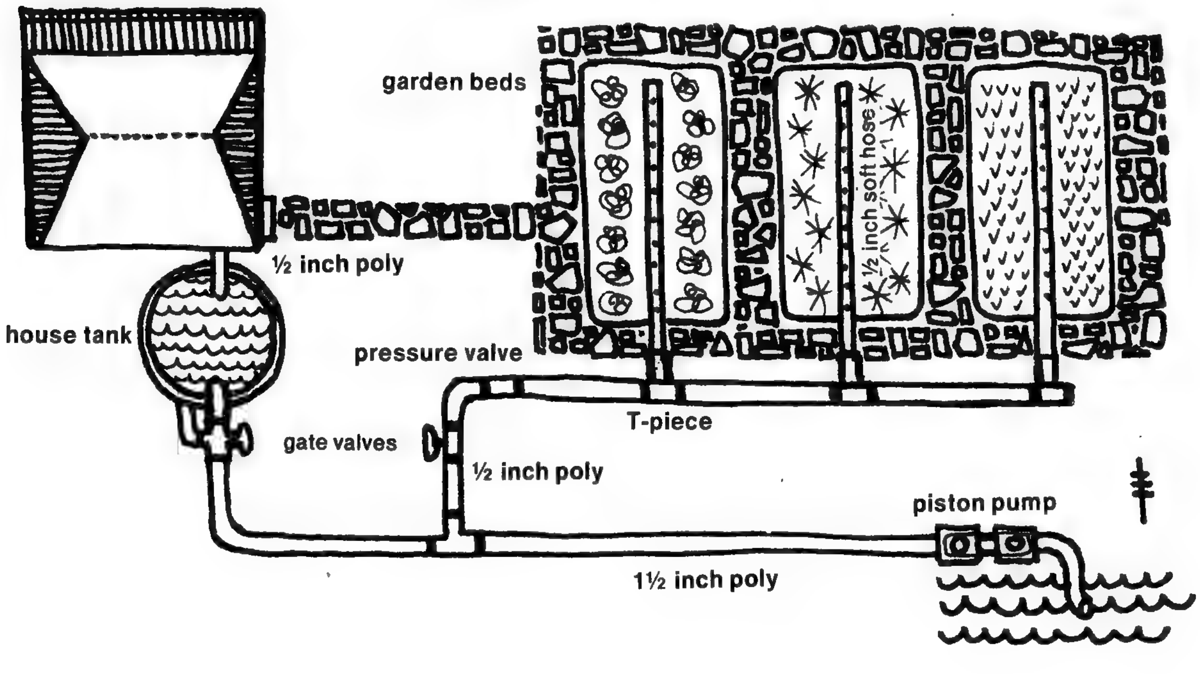
Attached to this at three points were vertical 1½-inch pvc pipes with adjustable sprinklers joined to the top. These pipes were two feet high. We hoped this might overcome the problem of the tall plants stopping water reaching the lower plants.

This system, including piping, T-pieces, joiners and spinklers, cost us another $100.

Problems

These sprinklers were too delicate. When adjusting them it was easy to be heavy-handed and damage them or somehow inhibit their efficiency.

SUCCESSFUL TRICKLE SYSTEM



They threw water out too fast and too heavily and instead of gently showering the plants, they pelted them (very bad on seedlings) and beat the ground, making it hard.

We were still watering the plants and blackberries and still missing some of the corners.

Year Three

After spending a largish amount getting the *Honda* going yet again, we decided we had been unwise to buy a second-hand pump. Like many other back-to-the-landers, we try to do things on the cheap, because funds are limited. But the cost in worry, time and actual money getting an old machine to do your bidding isn't worth it.

Our advice in hindsight, unless you are an absolute mechanical whiz, is to work out your needs and try to buy new.

We thought again. We had a big pump taking water up to the houses. Would it be possible to use that for watering the garden as well? Also what system of watering wouldn't waste so much water, encourage the weeds and bash the soil and plants?

The big pump is a piston and doesn't operate on pressure. Rather it uses a regulated pumping action to get the water to its destination. Up to now the garden had needed pressure to operate the sprinklers and throw the water the distance we needed.

The answer to the problem was *trickle irrigation.* This is a slow feed system in which water comes out of tiny holes along the length of the pipe.

We have a 1½-inch main poly pipe carrying water from the piston pump to one of the house tanks, depositing water into the top of the tank. At the bottom of the tank, another ½-inch pipe comes away and connects to the main pipe. There is a gate valve here.

At the garden end another ½-inch pipe leaves the main and runs along the top of the garden beds. It also has a gate valve and a pressure gauge at the junction point. At right angles from this ½-inch poly runs ½-inch soft trickle irrigation hose. These run down the centre of each garden bed, north to south.

The gate valve at the house tank allows us to feed the garden hose from the tank's supplies when the pump is not running. The valve is opened and the water passes out of the pipe at the bottom of the tank and into the main pipe and goes back downhill into the garden.

The gate valve at the garden end allows us to feed the garden hose at the same time the tank is being filled and the pump is operating. The pressure valve regulates the pressure at which the water enters the trickle irrigation hose to the required 20lbs per square inch.

Problems solved

The trickle irrigation system is wonderful — gentle watering that soaks the whole bed and only goes where you want it to go. We found that running it for a day once a week in medium heat, or every five days in peak heat, was sufficient.

No back-up watering was necessary, except of course for seedlings.

All problems were solved. We were able to sell the *Honda*, which gave us the $100 for the trickle hose and attachments. We water 12 large garden beds, each 20ft long.

Trickle...trickle... saves the trees

BY CHRIS MARTIN

We hate plastics, but —

There are just some things on which you cannot turn your back.

Over the last two years many *Earth Garden* readers like ourselves will have been badly affected by the drought.

There is no doubt that without water or a regular rainfall it is nearly impossible to grow anything. It is heartbreaking to see two and three-year-old fruit and nut trees dying because of lack of water.

We found that we were spending up to eight hours twice weekly to water our 70 trees and vines in the enclosed orchard using a hand-held hose. There had to be a better way and, as I am still working, we wanted to use as much time as possible for building.

The obvious answer was some kind of trickle or drip irrigation. However, we found that you either had to buy a kit for conventional gardens — which is not very suitable for a small orchard — or else have a big, expensive system put in.

After a great deal of time and experiment we found that we could adapt nearly all of the trickle systems to suit our own application as each has its own advantages and disadvantages.

Piping

If you can afford it, use ¾-inch polythene pipe instead of ½-inch as there is less friction and you can water a bigger area with more outlets. Also use the thicker *Class B* pipe, especially if you do not intend burying it.

The only disadvantage to this is that the various fittings for ¾-inch pipe are a bit harder to come by and if you use the Class B pipe, you will have to drill the holes, as it is too thick to use the punching tool.

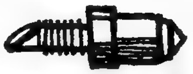


Fig 1 — Microjet

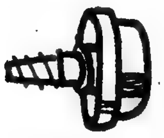


Fig 2 — Button dripper

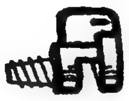


Fig 3 — Mini spray

Be sure to flush the pipe before putting on the end caps, otherwise the bits of plastic residue left over from drilling will block up the drippers.

Water Pressure

Most systems are designed to work off 7-35 pounds per square inch (psi) pressure. Higher pressures can be used, but make sure that there are more outlets to compensate.

We can water our orchard of 70 trees and vines all at the same time, but we have a 70 psi water pressure at the tap. The lower the pressure, the less area you will be able to water. By installing gate valves, the area can be watered in sections.

Filters

Filters or strainers are a must, otherwise the sprays will block up because most have an outlet hole of 1mm or less. They are quite inexpensive at $3 to $4 each. You can clean out the filter by reversing it under a running tap.

What to use & where

After talking to one of the local commercial orchardists we decided not to use drippers for our larger orchard trees. While they provide an even flow, the water does not penetrate very deeply into the ground.

This has three disadvantages:

1. The tree roots congregate nearer the surface, making them more prone to damage in hot weather.
2. Because the roots are near the surface they are discouraged from seeking natural water supplies deeper down.
3. A top heavy root system makes the tree more susceptible to being blown over because it is not properly anchored.

We therefore decided to use *Microjets* (Fig 1). These have the advantage of being able to put up to 40 litres per jet per hour in the ground and for that reason probably approximate regular rainfall with deeper water penetration.

We still use the *button drippers* (Fig 2) for vines and younger fruit trees that do not require as much water.

While our harvest was down a little at least we did not lose trees when others in our district did.

Vegetable garden

Our vegetable garden was originally watered with a sprinkler, but we realised that with only 25 per cent of the area watered actually growing food, we were wasting our most precious resource.

There are also some plants that do not like being watered from above, for example rockmelons and watermelons, as this makes them susceptible to downy mildew.

Mini spray (Fig 3) are good for seedlings, but are useless when it's windy because the fine spray can be blown everywhere but on the garden bed you are trying to water.

Microjets (Fig 1) are also good in many situations and come in different angles and water flow rates.

Their main disadvantage is that you have to make allowances for the growth of the plants you are watering — otherwise they can smother the spray. It is also difficult to make allowances for the water requirements of different types of plants. Further, if the garden bed is not being used, the sprays have to be removed and a plug put in, or water will be wasted.

Recently we came across a *dripper* (Fig 4) which we believe solves the problems of sprays. This dripper has a needle valve which allows an infinitely variable water flow from nil (saves plugging the hole) through to about 30 litres per hour at 70 psi. Because of this feature it can be used for seedlings right through to mature plants and different times of sowing may be done along the same line.

Because it is placed on the garden bed, no allowances need to be made for plant growth deflecting the water away from the root zone.

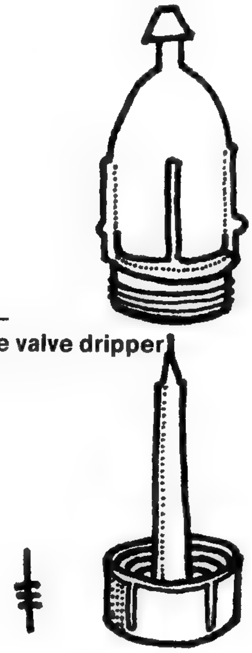


Fig 4 —
Needle valve dripper

Altogether our system for the orchard and the garden has cost us a little over $200, with $150 of this amount being for polypipe.

We estimate a saving of between 50 per cent and 75 per cent in water usage. We believe our plants and trees are healthier for using this method, not to mention the time that we are now able to use doing other things — like building our house!

SEED SWAPS

Would any readers have seeds or seedlings of Australian Red Cedar? We need just a few.

We have seeds of Oxheart tomatoes, not many, but enough to give a few interested folks a start. Each fruit can weigh 1½lbs. Send SAE for seeds.

Best wishes, Nin & Phil Harwood, The Lakes House, C/- PO Chidlow, Western Australia, 6556.

* * * *

Thank you for placing my message in **Earth Garden 28.** Have had several replies and received several unusual seeds. My offer still stands on Lablab beans in exchange for unusual vegetables or house plant seeds. Just had a fresh harvest.

Yours sincerely, G. W. Johnson, C/- PO Price, South Australia, 5570.

* * * *

I have a lot of mixed vegetable plants, but so far the only seeds I've collected are onion and pumpkin. I expect to have a lot more and would willingly exchange with others. I used to swap seeds with a friend in Perth. She lived in a clayey soil region and I was on sand. We always found that each other's seeds did extra well.

Your sincerely, Margaret Davies, PO Box 60, Lakes Entrance, Victoria, 3909.

* * * *

I have Quandong stones to swap, or if you don't wish to swap, I will send them free, if 80 cents is included for postage. The seeds are very big. I have a lot of Canna bulbs, which yield, red, orange and yellow blooms, also a few different kinds of pigface and cacti if anyone is interested.

Yours faithfully, Anne Maynard, C/- Hospital, Latje Road, Robinvale, Victoria, 3549.

Ground rules: Seed swap listings are free. Send a long, stamped and self-addressed envelope when exchanging seeds.

more land lines

We have a lovely farm at Pappinbarra, near Wauchope, NSW. Some grazing land, with forest ridges surrounding and bordered by a permanent creek. Would appreciate another person to help with organic vegetable garden and other self-sufficient ventures. We only have one house, so you may prefer to bring in a caravan, but temporary accommodation is available in the house.

If interested, please write: Leena Lee, "Nicorangi", R.M.B. Pappinbarra Road, Pappinbarra, via Wauchope, NSW 2446, or phone (065) 87 6156.

We're moving to Queensland and must sell our weekend retreat 2 x 25 acre blocks, side by side, each with a building permit. There's a 15 ft 4 berth caravan in good condition, with 14 ft annexe and 450 gallon tank. About 10 acres are clear and there are plenty of rocks and timber for building, plus a large dam. The land is 20 minutes on the Sydney side of Mudgee, NSW. No gas, phones or sealed roads, but school bus goes ½ mile away from the land. There are hidden gullies, kangaroos, wallabies, echidnas and birds. Price is $18,000.

Regards, Anne & Tony Walter, 70 Nandi Avenue, French's Forrest, NSW 2086. Phone: (02) 452 3379.

I am an *Earth Garden* reader who is looking for land in northern NSW, within 60 miles of the coast. I would like land with an existing dwelling, permanent water, cleared area for grazing and growing (40 to 60 acres) and some wooded slopes. I would need to know about road access and other useful information.

Please write to Michael Kelly, R.M.B. Barnes Road, Barkersvale, via Kyogle, NSW 2474.

We are a friendly, happy couple in our 20s, requiring acreage around the coastal region of southern NSW. We would need permanent water and be able to build. We have $4,000 and don't mind owning a share in land as we want to become self-sufficient.

Please write: Janelle & Steven Penfold, 23 Cordeaux Street, Duffy, ACT 2611.

We are a group of people looking for land, about 20-30 acres, anywhere in north Queensland, but preferably not too far from the coast. Ideally, it should have a constant source of water, a creek or river and plenty of stone on or near the property for building purposes.

Anyone knowing of anything suitable please contact: Gus & Margaret, 214 Bedford Road, Andergrove, Mackay, Queensland 4071. Phone: (097) 55 1698.

We wish to sell our share in a 326 acre conservation co-op at Kangaroo Ground, about 30 km from Melbourne. The aim of the co-op is to conserve the land in its natural state and to live in harmony with the bush. There are 32 shareholders, each with ¼ acre for house and garden. About half the members have built or are building. This is a great opportunity to enjoy the bush close to Melbourne with good neighbours.

For more information, write to Margaret & John Murphy, 585 Rathdowne Street, North Carlton, Victoria 3054, or ring Margaret (03) 347 6925 or John (03) 541 6277.

We are a couple in our mid twenties who wish to settle in the country and live a wholesome life. We hope to buy a substantial property in the future, but in the meantime we would like to hear from anyone interested in offering us board and experience in exchange for labour. We were both bought up on farms and are now working in Sydney.

Please contact: John & June, 21 Swan Street, Morpeth, NSW 2321.

We are planning to be back in Australia in January 1982 and will be looking around for 100 acres with a liveable house around Dubbo, or the Sawtell-Coffs Harbour area of NSW. We would like to visit any co-ops in these areas to get an idea of that type of farming. We don't really want to spend more than $20,000 on the land. If anyone can help or knows of land coming up in 1982, please let us know.

Our present address (until January 1982): Mr & Mrs T. J. Deeley, 10 Tanjong Bungah Road, Hillside, Penang, Malaysia.

JOB LINE

Accountancy in the country. A part qualified accountant with some experience in taxation is needed for a small country practice in East Gippsland, Victoria. Would suit someone who wishes to settle in a rural environment and work part time, say 4 to 5 days per week July to February and 2 to 3 days per week March to June, more or less, according to workload. Must have sound references and experience.

Peter Kastelein, PO Box 263, Orbost, Victoria 3888.

Is there a niche for myself and my nine-year-old daughter? I want to move to the country, but I find it a bit scary to go it alone. I haven't got much in the way of savings, but I can offer energy and skills. I teach art and crafts. I love gardening, cooking and music. Perhaps there is somebody still in the city who would like to make the big step with us?

Kerry & Belle Mahony, 33 Spruson Street, Neutral Bay, NSW 2089.

New members are invited to join Nungatta South joint venture, a non-sectarian, non-vegetarian community on a 1087 acre property in the far south-east of NSW. This community has operated for eight years and is looking for new blood. $2000 per share.

For further information, please contact Nungatta South, c/- PO, Genoa, Victoria 3889.

We have a 11½ hectares (30 acre) block on a hillside just outside Lilydale, Tasmania, overlooking the whole valley. It is a 20 minute drive from Launceston and electricity and telephone go right past the block. The land has had no chemical sprays or fertilizers for the past 10 years and is ideal for horses, donkeys, building a home, and berry fruits. Price is $16,000. There is a small creek at the bottom of the slope, with good rainfall.

For furthr details please contact Michael J. Roads, Homeland, Thora, NSW 2492. Phone: (066) 55 8514.

For sale, Tasmania — small undeveloped acreages overlooking Bass Strait, adjoining National Park, electricity and phone available, some with water, mild coastal climate. Priced from $8,000 to $18,000. Vendor terms if required.

Contact: Elvin Dick, P.O. Box 487, Burnie, Tasmania 7320. Phone: (004) 42 3085.

I have a nice 32 acre block for sale. It is 15 miles north of Gympie in Queensland, quite handy to the Sunshine Coast. Nicely elevated with a gentle northerly slope to a permanent creek as rear boundary. Plenty of underground water and loamy soil. Cleared home and garden sites, rest lightly timbered. A lovely hideaway, with no near neighbours; electricity and phone available. Price $16,950.

S. F. McGowan, PO Box 19, Mater Hill, Qld, 4101. Phone (07) 44 1129 (business hours).

We are moving to Queensland in August and will be looking for 10 or more acres of uncleared or partly cleared land within a 30 mile radius of Nambour. We intend to build. The land would preferably be suitable for a dam as we intend to establish organic fruit and nut trees.

Dennis Sellars, 2/21 Monaco Street, Parkdale, Victoria, 3194.

Gossip

Dear Friends,

We were upset to hear recently that people in Holland can no longer drink water from the ground, for fear of toxic contamination. Like the Agent Orange scare, this is an example of the dangers of the chemicals used in agriculture.

We hope this will never happen here in Australia. But already we are faced with a polluted Murray River, soil salinity and erosion on a vast scale and a food production system which depends on fossil fuels, artificial fertilisers and chemical pesticides.

Organic growing has always seemed like plain common sense to us. Our interest in it played a major part in prompting us to start *Earth Garden.* Adam and Eve didn't use chemicals in their garden. We featured them on the cover of our first issue in March 1972, in E.G. 4 in February 1973 and again in this issue, as a reminder that until 150 years ago all human and animal life on earth was sustained by plants grown without poisons.

In this issue we once again pinpoint some of the many methods of getting plants onto the plate while protecting our health and our environment. We are in contact by mail with many of the organic growing and permaculture groups which have sprung up throughout Australia. Their magazines and newsletters and contact with our own readers constantly reassures us that thousands more people think along the same lines as we do.

We were happy to meet some organic growers in person recently and to exchange ideas with them. First we went to the autumn fair held by the Hunter Organic Growers' Society (HOGS) at Mulbring in March, where we interviewed their president, Edwin Crawford, a successful traditional farmer, who never adopted chemicals. The photo of Carl Hoipo, vice president of the Henry Doubleday Research Association (HDRA), with compost bins (see back cover) was taken at the autumn fair at Josephine Richardson's Sahara Farm at Kenthurst (Sydney), a place we always enjoy visiting.

What's Cooking?

Having produced the goodies in the garden, how do you go about preparing and cooking it? How do you handle an excess crop of eggplant or zucchini? What's your favourite meal? We'd like to know what's cooking at your place, from basic hints to tasty tucker, to share with our readers in our next issue, *Earth Garden 31,* due out in August. Copy deadline is end of June.

There will be articles on building a log home (part 1), seed sprouts, herb gardens, windmills, our usual features, like Place, Access and Land Lines and lots more! Irene is compiling an index to issues 21 to 30 also, which will include *Access 1 and 2* (E.G. 22-3 and 25).

Watch for news of *The Third Earth Garden Book* and *The Settler's Guide,* which will be published later this year.

Stay warm.

Peace & love
Irene & Keith

EARTH GARDEN, PO Box 378, Epping, NSW, Australia, 2121

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No need to cut the page — just send us details.

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EG2: ORGANIC FARM . . . START A GARDEN . . . NEIL DOUGLAS ON THE ART OF GARDENING . . . P. A. YEOMAN'S KEYLINE SYSTEM . . . KIEWA FARMS . . . DRYING FOOD.

EG3: HERBS . . . COMPOSTING . . . ALL ABOUT GOATS . . . COMPANION PLANTS . . . MUDBRICKS WITH ABBIE AND NEIL . . . DOMES . . . WATERWHEEL . . . BREAD . . . POTTERY . . . SPINNING .

EG4: A PLEASANT TREATISE ON THE HONEY BEE . . . BACK TO THE LAND IN TASMANIA . . . THE TRANSITION . . . ENZYMES . . . BLACK SHEEP . . . CANDLES . . . HOME TANNING . . . DONKEYS.

EG5: WIND ISSUE — WINDMILLS . . . WINDPUMPS . . . GENERATORS . . . RAKU . . . CINVA-RAM . . . TOOLS . . . POULTRY . . . THE VEGAN WAY . . . MOON PLANTING . . . JUST NINE ACRES.

EG6. SOLAR 1 — SOLAR COOKER . . . SUNDIALS . . . SUN SCIENCE . . . THE LOST WORLD . . . CONCRETE HOUSE . . . SHALOM . . . CAJUN COOKIN' . . . SPIRIT OF NIMBIN . . . CLIFF PUGH . . . GONDWANALAND.

EG7: SOLAR 2 — SOLAR HOT WATER IDEAS AND SOURCES . . . GOOD COMPANY . . . FLIGHT FROM THE CITY . . . ANGORA GOATS . . . MAKE A LEATHER BAG AND BELT . . . MUDBRICKS AGAIN.

EG8: GAS POWER — METHANE DIGESTER . . . POWER FROM THE PIG PEN . . . BY TRUCK TO TASSIE . . . ¾ ACRE . . . CUMBUNGI HATS . . . HARMONY FARM . . . TAPERS . . . INKLE LOOM . . . COTTAGES . . . A-FRAME.

EG9: ALTERNATIVES TO PETROL . . . LPG GAS . . . MARY'S PLACE . . . STONE RUBBLE BUILDING . . . MACROBIOTICS . . . OATS . . . DUCKS . . . HORSE AND CART . . . A RUG FRAME . . . ORGANIC FARMING . . . HOW TO KILL A PIG . . .

EG10: A GRANITE HOUSE . . . BAMBOO FLUTES . . . GEESE . . . CHIP WATER HEATER . . . MAKE BEEHIVES . . . NODDY'S DOME . . . MUDBRICKS YET AGAIN . . . JARRAH SHINGLES . . . BIO-DYNAMICS . . . A TANDEM . . . INDEX.

EG11: WATER ISSUE — HYDRAULIC RAM . . . WATER WHEELS . . . A MILLER'S TALE . . . SEED PRIMER . . . HEAVY HORSES . . . OKRA . . . TOMATOES . . . START WITH HENS . . . WINE . . . HARD CHEESE.

EG12: KEEPING FOOD — DRYING . . . SALTING . . . BOTTLING . . . STORING . . . TAHU . . . TOBACCO . . . PLANT PROPAGATION . . . GARLIC SPRAY . . . PLANS FOR A SOLAR WATER HEATER (PART 1) . . . SOLAR STILL . . . SOLAR COOKER.

EG13: THE BUSH — MEN WITH AXES . . . WOODCHIPS . . . NATIVE GARDEN . . . FLORA AND FAUNA . . . NATIONAL PARKS . . . WILD PLACES . . . WILD LIFE . . . BUSHCRAFT . . . SOLAR HOT WATER PLANS (PART 2).

EG14: SELF-SUFFICIENCY — GARDENS FOR ALL . . . BOTOBOLAR GRAPES . . . ABIGAIL'S GOATS . . . MILLET . . . CRUSOE . . . THOREAU . . . HELEN AND SCOTT NEARING . . . WE BUILT IN STONE . . . HEALTHY SOIL.

EG15: A LYTEL HERBAL — GROWING AND USING HERBS WITH TEXT AND ILLUSTRATIONS FROM THE CLASSIC 16TH CENTURY HERBALS, WITH MODERN COMMENTARY . . . COMPANION HERBS.

EG16: LYTEL HERBAL (PART II) — PLUS PEOPLE AND THE LAND . . . MOORA MOORA . . . POULTRY SHED . . . PEAFOWL . . . GOAT NOTES . . . BASIC BEEKEEPING . . . PIONEER PISE . . . MIRACLE PUMP . . . COMFREY.

EG17: ALL ABOUT FENCING . . . DRY STONE WALLS . . . DUCKS . . . NETS . . . MAKE SOAP . . . THE AUTONOMOUS HOUSE . . . POLE SHELTER . . . PISE IN DARWIN . . . BREEDING BLACK SHEEP . . . ASPARAGUS.

EG18: FRUIT — ORANGES . . . LEMONS . . . CITRUS . . . OLIVES . . . NUTS . . . TROPICAL FRUIT . . . FODDER TREES . . . BIRDS AND INSECTS . . . BUILD A ROAD . . . HOME BIRTH . . . CINVA-RAM HOME . . . WOOD-FIRED KILN.

EG19: WOOD HEAT — POT-BELLY STOVES . . . JOTUL . . . COOKERY . . . MAKING A QUID . . . BUILD A STORAGE CELLAR . . . EARTHLY DELIGHTS . . . ACCESS . . . BUSHFIRES . . . SUNRISE FARM . . . STONE FRUIT . . . MACADAMIAS.

EG20: APPLES . . . PEARS . . . CORDON AND ESPALIER . . . AVOCADO . . . THE ZOLINS . . . POLLEN . . . BUILD A HAYBALE PIG HOUSE . . . LOVE YOUR COW . . . ROSE HIPS . . . MUDBRICK FLATS . . . ELECTRIC GENERATORS . . . SOLAR HOMES . . .

EG21: WOMANCRAFT — ALL ARTICLES BY WOMEN . . . EARTHLY ARTS . . . PUPPETS . . . AXEWOMANSHIP . . . SPIN AND WEAVE . . . RUGS . . . OLD ROSES . . . MUDDY BUILDING . . . SUMATRAN HOUSE . . . THE GROUP . . . INDEX TO EG10 TO 20.

EG22/23: AUSTRALIAN ACCESS 150 PAGE SOURCE BOOK — ABORIGINES . . . ORGANIC GROWING . . . PERMACULTURE . . . BILL MOLLISON . . . WIND . . . SOLAR . . . WATER POWER . . . SOLAR CELLS . . . WITH ACCESS TO GROUPS, BOOKS, TOOLS AND TECHNIQUES . . . WATER SUPPLY . . . BUCKET PUMP (DOUBLE ISSUE).

EG24: PLACE — 24 GROUPS AND NEW SETTLERS SHARE THEIR "PLACE" OUTSIDE THE CITIES. INCLUDES MARE CARTER, RON EDWARDS, NEIL DOUGLAS . . . GUNDAROO STORE . . . THE OASIS . . . RAINBOW REGION . . . UNIVERSAL BROTHERHOOD . . . MT OAK . . . MOORA MOORA . . . BUSH ASHRAM.

EG25: AUSTRALIAN ACCESS TWO 130 PAGE SOURCE BOOK — LIVESTOCK . . . AQUACULTURE . . . FENCING . . . WOMBAT GATES . . . KILLING . . . TANNING . . . FOOD AND NUTRITION . . . DOROTHY HALL . . . FRUITARIAN . . . VEGAN . . . STORAGE . . . GRINDERS . . . MINCERS . . . METHANE BASICS . . . WINDMILLS . . . PASSIVE SOLAR HOMES . . .

EG 26 COLOUR SPREAD — THE EARTH-BUILT KASBAHS OR MOROCCO . . . OWNER-BUILDERS REPORT ON THEIR HOMES OF STONE, TIMBER AND MUDBRICKS . . . BUILD A SLAB COTTAGE . . . TREE FELLING . . . TWO SOLAR-ELECTRIC HOMES . . . THE EARTH GARDEN REPORT . . . SURVIVAL VINEYARD . . . FRUIT WITHOUT POISONS . . . ACORNS . . . A COMPOST DUNNY . . . HOME-MADE GAS

EG27: FOOD PLANTS — 100 TROPICAL FOOD PLANTS FOR AUSTRALIA (PART I) . . . PLANT PROTEIN . . . 16 LEGUMES TO GROW & EAT LIKE WINGED BEAN, PIGEON PEA, LABLAB BEAN . . . COW-PEAS . . . SWORD BEAN . . . LIFE RAFT . . . BLACKSMITHING . . . BLUESTONE BUILDING . . . MUDBRICK SOLAR HOME . . . WOK COOKERY . . . CHOKO . . . HOMEBIRTH

EG 28: ANIMAL STORIES — BY PACK-HORSE THROUGH THE VICTORIAN ALPS . . . HORSE & BUGGY . . . MARY'S BLACK SHEEP . . . THE WOOLLY MERINO . . . TIMBERTOWN BULLOCK TEAM . . . TROPICAL FOOD PLANTS FOR AUSTRALIA (PART 2) . . . STRINGYBARK BASKETS . . . TAMARILLO . . . DON'T GET STUNG! (BUYING BEES) . . . SOLAR TRIKE & FAN . . . TIPS & HINTS . . . MAKE A POKER

EG29: MUDBRICK BUILDING: SIX BUILDERS & THEIR MUBRICK EXPERIENCES . . . MUD BARBECUE . . . BOB'S BONZA BRICKMAKER . . . EARTH FLOORS, CURVED WALLS AND HERBS ON THE ROOF (SOD IT!) . . . LOW ENERGY DESIGN . . . THE CUTTING AXE . . . FOOD PLANTS FOR TROPICAL AUSTRALIA (PART 3) . . . COCONUT MATS . . . MANGO MANIA . . . ACCESS.